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Meeting the Demand for More and Better Service in the Parks

By Charles Downing Lay
Landscape Architect

WE used to think that park space more or less dressed up with lawns, trees, walks, drives, and flowers was all that was necessary to make a park, but we begin to feel that everything must be organized, directed, and managed.

The old custom of going to a park for a picnic or for an afternoon of freedom has passed, and, in fact, we can have little comfort from a picnic and little freedom in a park because of the great number of people all attempting to picnic and be free. The increase in sport and the decreased opportunity for simple country pleasures near our cities have both contributed to this result.

The ideal conception of what a park should be is changing with the demands made upon it. The naturalesque park, formerly so fashionable and so satisfying, is seen to be badly adapted to the entertainment of large numbers of people bent upon playing games. The naturalesque park is expensive to maintain under the intensive use of great numbers of people. If more walks and wider roadways are built, it rapidly ceases to be natural in appearance. Clay courts for tennis, bare ball fields, large parking spaces and golf courses soon destroy all semblance of naturalness. The conclusion is soon reached that it is better to re-design and rebuild the park, in order to adapt it more perfectly to the new demands that are being made on it.

The imperative demand for better service, whether it be in the upkeep of tennis courts or golf courses or in the furnishing of service such as swimming pools and other things which may not now be supplied, must be met. It is usually less expensive to supply these needs in an old park than in a new one. The demands for better service are not confined to sport or amusement features. They include also demands for better roads, for more parking spaces, for finer trees, and more perfectly kept lawns and gardens. Primitive comfort stations will no longer suffice. Facilities must be as sanitary and as elegant in a park as in the homes of the people.

The demand for more service can be met, as I believe, by charging fees for the use of many things which are now free. The fees for the service rendered should be enough to cover the yearly cost of the service alone. This is not to be considered as a scheme for putting parks on a paying basis, for there is no justi-

Cities Lose No Ratable Values by Taking Land for Parks

In his paper before the recent Annual Conference of Mayors and Other City Officials of the State of New York, of which this article comprises the major part, Mr. Lay pointed out the fact that as the cost of park lands is in a few years added to the value of surrounding property, a city loses no ratable value by taking land for parks. But all cities having adequate park systems are confronted with the problem of maintenance costs, and the author shows some of the possibilities of the fee system and the benefit assessment plan as an aid to park financing.

fication for charging anything to cover the interest on the capital charge, which is transferred to the surrounding property.

It is my belief that golfers should pay the entire cost of maintenance of a golf course and that people who can afford to buy the expensive equipment necessary to play golf prefer to pay and to pay more in order to get better service.

Much can be said to prove the justice of paying for many things out of taxes, yet I believe it is easier to manage such luxuries as golf, and a fairer method, when playing fees are charged. If the activity pays for itself no criticism can be made of it, and there is no limit to the improvement of the service as long as the yearly fees provide funds for yearly maintenance. If, on the other hand, the activity be supported on general funds, it is always difficult to get enough money to carry it on well, and the activity itself is open to criticism as being something provided for the few at the cost of all.

Charging fees unfortunately suggests the letting of concessions and the presence of the concessionaire. This evil must be avoided. Every park activity must be managed by the park department itself at a minimum cost for the benefit of all the people. Swimming has increased in popularity as rapidly as golf, and people are accustomed to paying fees for the use of suits, towels, and bath-houses. If the use of the swimming facilities is great enough, the entire cost of operation can be secured from the fees. No city should hesitate to give its people the benefit of a clean pool and comfortable bath-houses, nor should the city leave this important amusement for exploitation by commercial interests.

The fee system opens unlimited possibilities for the extension of park service.

If, for instance, a number of people would like to play cricket, which is almost unknown in this country, they might form a club, guarantee the first year's charges, and have a cricket field built in a park. It is not for their exclusive use, of course, but for anyone who wishes to pay the fees. A city without a stadium or ball field might undertake to build one if the park department were assured that an attendance of 10,000 people could be counted on once a week for an entrance fee of 10 to 20 cents per person. Such a facility adds immeasurably to the prestige of a city and to the enjoyment of its people, and can be justified for its advertising value alone. An attendance of 10,000 per week for seven months would produce about $30,000 at 10 cents per head, which is enough to operate a large field. If the admission fees are raised, the income should be enough to pay the interest and pay off the bonds issued to build the field.

Fees for tennis, for croquet, for field hockey and many other games are entirely reasonable and make it possible to satisfy all demands, so that the request for more courts or more fields need never be denied because of lack of park funds. Fees are always charged for the use of boats, yet if the park department undertakes to manage and promote boating, it can increase its service and the use of the facility by providing more and better boats and different kinds of boats.

There is no reason to suppose that anyone who can buy a pair of skates for fancy skating would object to paying 5 or 10 cents to get on a rink where the ice is kept in perfect condition and where because of the possibilities of the fee system overcrowding is not permitted. It is reasonable enough for a park commission operating on tax money to say, "One rink is all we can afford and everyone is permitted to use it. We are sorry if it is crowded." This is an automatic discouragement of the use of the service, whereas, under a fee system, if the service is popular it can be extended to meet the demand.

Introducing the Fee System Gradually

The fee system should not be first introduced on existing fields for this is more likely to be resented. It should be tried on new facilities until the people have become accustomed to it and see its advantages in the superior service made possible when everyone pays for the use he makes of the facility. There are innumerable extensions in service which can be accomplished if fees are charged. Park concerts should be put under the fee system. Five thousand people at a nickel or a dime apiece would pay for a fairly good concert.

In some parks there are almost nightly sheep roasts where people may meet as clubs or other organizations, get a good dinner, which is eaten under the trees, for only a little more than cost.

Dancing is done in some parks. At 10 cents a head, a good floor and good music with proper supervision can be provided. On stormy nights the orchestra, which is under contract for the season, is put in busses and taken to hospitals, asylums, and other institutions where it gives free concerts to the inmates.

I will not attempt to set the limits for the fee system. I have talked with some social workers who favor a fee of some kind, even if

it be only a cent a week or a month for club membership for every activity.

It seems that we have passed the stage where everyone must have the same thing for nothing in parks, which means that most of us get nothing. There is no lack of democracy where everyone is permitted to pay for the luxury he wants according to his capacity and his desires.

A certain proportion of all fees should be set aside for promotion and for advertising. If it requires advertising and promotion to sell life insurance, which is for the benefit of the insured, why not advertise in order to sell our parks? The success of any park department depends upon the customers it attracts; and if intelligent publicity brings more people, the expense is justified.

Assessments for Parks Are No Hardship on Property Owners

I should like also to urge, in view of the heavy indebtedness and high taxes in all cities, the benefit assessment plan for acquiring park property.

Is there any good reason why the city as a whole should pay for a ten-acre park in a district where it is needed, when we all know that as soon as the park is established the owner of a house facing on it can sell out at a greatly enhanced price? Why should he have this gift? Would it not be fairer and tend more to the stability of property values throughout the city if the cost of the park were assessed on the property benefited? Parks can then be acquired without reference to the city's limit of bonded indebtedness and in any locality where the consent of property owners can be obtained.

The assessments are no hardship to the property owners, for there are various schemes for spreading the assessment over a term of years or of carrying them indefinitely as a lien or mortgage on the property. They will be felt less than the increased assessments and increased taxes under the old plan.

Active, Interested Park Commission the First Requisite

The conclusion to which we are inevitably drawn is that an active, interested park commission, seeking to attract customers to the parks and attempting to supply all their wants while they are there and to make them have a good time, is the first requisite in an efficient municipal park system. Such a commission, having an eye open for opportunities for service and for wise publicity to increase attendance, will find its power and prestige greatly increased if it can acquire parks by assessment and if it can charge cost fees for unusual or extra service.

President of the National Board of the Y. W. C. A. Appeals for Better Support for the Playground Movement

(From a Recent Letter to the Editor of *The New York Times*)

TWO years ago, walking along a road in one of the wildest parts of northern New Hampshire, I met an old man, a mountain guide and trapper, who told me that when he had gone as a young man to that north country, forty years before, mothers did not dare to let their children go out of their sight because of the danger of wild animals. A greater and more insistent terror than this of the frontier lies heavily upon the mothers of all little children in our cities and even through many country districts today because of the ever-present automobile. Playgrounds not only help the children, they help the mothers and they relieve for motorists both the danger of doing injury and the strain of driving where a little child is likely to dart into the street after its ball. Perhaps the time will come when not only playgrounds but vacant buildings and vacant rooms in churches and schools can be used throughout the week and throughout the year as playgrounds and nursery schools for children of all classes, thus giving to children a greater sense of space, and relief from strain to mothers on whom the necessity for keeping children happy in congested quarters rests very heavily.

There is no task in all our social structure more important than the task of giving adequate care to little children. There is no task that makes such heavy demands on nervous energy and on ability and training. Passengers in a street car all look askance on any woman who is unfortunate enough to be irritable with a little child, but only those who have imagination and sympathy know what demands are made on a mother today when a child's tremendous energy and properly limitless curiosity have to be restrained within the very small space and conventional atmosphere that are the lot of all but the exceptional few in our cities. * * *

If the financial support of women's causes were commensurate with the liberty, the freedom and the respect offered by American men to their women, perhaps the solution to some of our serious social problems today could more easily be found.

EMMA BAILEY SPEER,
(Mrs. Robert E. Speer).

The Toledo Safety Building

This New Structure, the First Unit of Toledo's Proposed Civic Center, Houses the Central Police Station and Jail, and Serves Temporarily as City Hall

By Virgil Sheppard

Secretary, The Commission of Publicity and Efficiency, Toledo, Ohio

THE city of Toledo has completed the first, and long-waited-for, unit of its civic center project. The opening of the new Safety Building marks Toledo as one of the comparatively few cities in the United States to definitely complete a portion of the proposed civic center.

The new Safety Building is probably one of the best structures of its kind in the United States. Constructed for the purpose of housing the offices and jail of the central police station, it is also being used temporarily as a city hall. The building incorporates the latest and the best in police-station design.

The architects and city officials who were responsible for drawing up the plans visited the police stations and jails in other cities to learn first-hand the modern requirements of police station construction. Careful consideration was given to the preparation of the plans so that the structure would be designed to meet the present and future needs of the city and yet not cost too great a sum.

The main features of the building indicate its substantial character. The middle section of the edifice is five stories high, and the two wings three stories. The framework is of structural steel. The walls are composed of large slabs of Bedford limestone. The tile roof is of the Spanish type. All the floors are concrete, making the building fire-resistive throughout.

The floors in the hallways are surfaced with terrazzo, and the main corridor is finished in Tennessee marble. The ground floor area is practically 23,000 square feet. Nearly every feature of the building signifies its massive and colossal construction.

A modern suction system of ventilation has been installed. The building is steam-heated, the heat supply coming from the adjacent power-plant of the county court-house. On clear days the numerous and large windows provide adequate daylight in all parts of the building.

The city jail is located on the fourth and fifth floors of the main section. At the present time the women prisoners are housed on the fourth floor and the men on the fifth. Each of the 66 individual cells has a wash-bowl and a toilet-stool with running water. Each cell has an outside window. The bunks are made

POLICE COMPLAINT ROOM IN THE TOLEDO SAFETY BUILDING

of heavy timbers, with mattresses supplied in the cells occupied by women. The construction of the cell blocks makes it very easy to keep them in a clean and sanitary condition.

Besides the individual cells, there are pens or dormitory rooms which can be used for the confinement of witnesses or for first offenders. Adjacent to each pen there is a room containing either a bathtub or a shower-bath.

A small stage has been constructed in one of the rooms on the fifth floor. By using a specially designed screen flooded with light, witnesses can view suspects stationed on this stage, without the suspects' seeing the witnesses. This is one of the many new features included in the building.

On the fourth floor is found a complete and modern kitchen, where the food for the prisoners is prepared. An emergency hospital is also being outfitted on the floor.

The prisoners are brought to the upper floors of the building either by elevator or by stairway, both of which are used for this purpose alone. Other elevators and stairways provide vertical transportation for the general public. When called to the courtroom at the opposite end of the building, the prisoners are taken down the special elevator or stairway to a tunnel underneath the basement. This "bridge of sighs" runs under the main section of the building to the north wing. Below the courtroom are pens which can be used to lock up prisoners until they are wanted above in the courtroom. This system keeps the prisoners away from contact with the public when being sent from the jail to the courtroom.

On the first, second, and third floors of the main section are the various police offices and some of the administrative offices of the city. In the basement of the main section there is a very fine pistol range, 100 feet long. The use of this range is a great convenience in the holding of pistol practice.

On the second and third floors of the south wing is a gymnasium and drill room, 64 by 84 feet, fitted out with the latest gymnasium paraphernalia. Beneath the gymnasium on the ground floor is the patrol and motorcycle room. The prisoners are unloaded here and taken either to the fourth or the fifth floor to be registered.

Beneath the patrol room is the locker and shower-bath room. Each patrolman has been assigned a steel locker.

On the third floor of the north wing are the chamber of the city council and the office of the city clerk. Administrative offices occupy the second floor of this wing. On the ground floor are two courtrooms which have a very impressive appearance because of the beauty of construction. The walls are finished in Tennessee marble and imitation travertine. One of the odd features is the location of the radiators, which are partly hidden in the walls.

ROW OF CELLS IN THE SAFETY BUILDING

CIVIC CENTER UNDER DEVELOPMENT IN TOLEDO

The site of Toledo's civic center is in the downtown district in a section where no new buildings have been constructed for fifteen years or more. About two-fifths of the land has been acquired, and as most of the existing buildings are quite old, the purchase of the remaining land will be possible without great expense. The Safety Building is shown in the right-hand lower corner of the central plaza. Plans are now being considered for the construction of the proposed City Hall to the north of the Safety Building, and Congress has been asked to appropriate the money for the construction of a Federal Building which it is planned to erect to the west of the City Hall site.

Competitions in Design for Street Fixtures

TWO competitions in design for street fixtures, to close October, and to carry prizes aggregating $4,650, have been announced. The first competition calls for designs for traffic-signal towers and standards and street-lighting standards. The second competition is for filling-station designs. In neither case is electrical or mechanical equipment a part of the competition.

These competitions are being conducted by the Biscayne Boulevard Association, Miami, Fla. The Association has appointed Messrs. Bennett, Parsons and Frost, consulting architects, Chicago, to serve as professional advisers for the competitions. The purpose is both to secure designs appropriate for Biscayne Boulevard and to stimulate interest in the designing of better structures for these purposes than the devices now in general use.

The street for which the designs are desired is a level 100-foot street extending from the center of Miami for 3½ miles to Northeast 55th Street, where it becomes the Federal Highway, which, combined with the Dixie Highway, extends 360 miles to Jacksonville and beyond to the Northern States.

The first mile of the street was formerly Bay Shore Drive, recently widened and improved. The remaining 2½ miles is a new street involving cutting through fourteen improved city blocks and widening a narrow street (formerly Northeast Third Avenue) through nineteen improved blocks. This new section will be open to traffic about December 1, 1926.

The Biscayne Boulevard Association agrees to award to the winners, within five days after the judgment of the jury, prizes as follows:

Competition No. 1.—First prize, $1,000; second prize, $600; third prize, $400; fourth prize, $200; six mentions, each $75.

Competition No. 2.—First prize, $750; second prize, $400; third prize, $250; fourth prize, $150; six mentions, each $75.

Program of the competitions may be obtained by addressing Harry T. Frost, in care of Biscayne Boulevard Association, Columbus Hotel, Biscayne Boulevard, Miami, Fla.; or *American Architect*, 239 West 39th Street, New York; or Bennett, Parsons and Frost, 80 East Jackson Boulevard, Chicago.

Transcript of the Proceedings of the Case of

Light vs. Darkness

On Trial Before the Hon. Moses Cleveland, Judge of the Court of Progress

Court Stenographer O. F. Haas

Illuminating Engineer

PLEADINGS:

"Light's" petition states that "Darkness" has always been in possession of Superior Avenue, Cleveland, which is the widest street in the city, is paved with granite block in excellent condition and is the most direct route east to the city limits. Light further states that Darkness while in possession of this street has not been able to adequately meet the conditions imposed by a rapidly growing municipality: that night crimes on the street have been frequent; that traffic accidents have been very numerous; that traffic has been directed over to well-lighted streets such as Euclid, Prospect, etc., and that the character of Superior Avenue from a business standpoint has been deteriorating rather than improving. Light claims he can improve each, every, and all of the above conditions. Wherefore Light prays that Darkness be ejected and Light given possession.

THE ANSWER:

Darkness denies each, every, and all of the allegations in Light's petition and upon hearing of the issues joined prays the Court that Light be denied possession and that he, Darkness, be left in control.

TRIAL:

The Jury of citizens having been sworn, the Plaintiff called as his first witness Mr. E. J. Donahue, Commissioner of Traffic, City of Cleveland.

Commissioner Donahue's evidence may be

DARKNESS HAS POSSESSION—"LIGHT CLAIMS HE CAN IMPROVE EACH, ALL, AND EVERY OF THE ABOVE CONDITIONS"

summarized as follows:

"It is true that there have been a large number of serious night traffic accidents on Superior Avenue, and it is my firm opinion that if the street were adequately lighted this number would be materially decreased. Further, in my opinion, the lighting will assist the police in apprehending lawbreakers and thus tend toward a reduction in crime."

The Plaintiff called his second witness, Mr. M. J. McCafferty, Commissioner of Street Lighting for the city of Cleveland, whose evidence follows:

"Good lighting will attract night traffic to Superior Avenue and thus relieve other more congested streets."

The Plaintiff called as his third witness Mr. James E. Cosby, Executive Secretary of the Superior Avenue Association, whose evidence follows:

"A proper lighting system on Superior Avenue will be a real civic improvement. It will tend to increase real estate values by attracting the higher-class business establishments to our street."

The Plaintiff here rested his case.

The Defendant then called as his first witness "Mr. Costs Too Much."

Mr. Costs Too Much's evidence follows:

"You fellows are always trying to spend money. Who is going to pay for this system? Do you want to bankrupt us all? Maybe we have had a few people get killed on Superior Avenue—people get killed in train wrecks also."

The Defendant called as his second witness "Mr. Likes-To-Argue," whose evidence follows:

"The divine plan of the world has preordained darkness during the night-time. Lighting is an attempt to interfere with this divine plan. Illuminated streets will induce people to remain later out of doors, resulting in an increase in ailments caused by colds.* The fear of darkness will vanish and men will stay out later at night, thus making their wives angry, which in turn will lead to an increase in divorces."

The Defendant then called as his third witness "Mr. Kant B. Done," whose evidence follows:

"Automobiles have headlights. Let the drivers use these headlights if they want more light. You couldn't make a good job illuminating Superior Avenue, anyway—it's too wide."

The Defendant then rested his case.

The argument of the Plaintiff follows:

"Your Honor, and Gentlemen of the Jury, the arrangements whereby it will be possible for Light to occupy Superior Avenue with respect to the financing have been very satisfactorily and easily worked out. For the benefit of Mr. Costs Too Much, who I understand lives in Euclid Village, anyway, I'll say the property owners have already enthusiastically signed a petition in which they agree to pay for all above-ground costs, such as the posts and lanterns, while the Department of Light and Power will pay for the underground construction and make an annual charge per lamp per year to the city covering maintenance, current and fixed charges.

"Mr. Likes-To-Argue has brought to your attention the divine plan of the world. Possibly he also feels that we should not wear clothes.

"In regard to remaining later out of doors and therefore catching cold, you know, gentlemen of the Jury, that if you live in Cleveland you have a cold, anyway. Possibly in the cause for divorce Mr. Likes-to-Argue has made one point which is hard to refute. I am a married man myself and see some justification for his argument. However, I will say that it has always seemed to me that it is rather the turning-off of lights that has to do with the divorces.

"Mr. Kant B. Done has said, why not let the automobile drivers use their headlights? Perfectly satisfactory if you are the only driver on the street, but I defy any man to be able to see on a street in which he is facing a battery of bright headlamps. If Light occupies the street, by relieving the contrast between the bright headlamps and their background, he will reduce glare to a minimum.

"In regard to the street, which is 76 feet from curb to curb, being too wide to light, I have already had an opinion from Mr. Howell Wright, Director of Public Utilities, and Mr. F. L. Mowry, Commissioner of Light and Power, and they in consultation with the engineers from Nela Park have developed a lighting plan which will prove satisfactory in every respect. The plan calls for the use of 25,000-lumen (2,500-candlepower) Mazda lamps, and the installation will be the first in which this high-powered lamp has ever been used. This is fitting, however, as Cleveland was the first city to install the 15,000-lumen (1,500-candlepower) lamp which is now being used in a great many cities. The lamps are to be located in lantern fixtures similar to those used for the ornamental lighting in other Cleveland streets and will thus form a part of the unified and comprehensive design which is being developed to adequately light Cleveland's

* Actual arguments against street lighting used in the Cologne *Zeitung* in the year 1816.

THE VERDICT WAS "TO EJECT DARKNESS AND GIVE LIGHT AUTHORITY TO OCCUPY THIS STREET"

entire network of streets and boulevards. The posts are similar to other posts used in the city, except somewhat larger, and give a mounting height to light source of 18 feet. The units are located opposite each other on 100-foot centers."

"This system proposed by my client, gentlemen of the Jury, will reduce traffic accidents, will alleviate crime, will build up the character of the street and thus increase real estate values, and, lastly, it will, over a period of time, break down the feeling of antipathy toward travel on Superior Avenue and be responsible for the re-routing of traffic to this wide thoroughfare, thereby relieving other more congested streets, and I therefore ask you to eject Darkness and give Light authority to occupy this street."

With this argument, the plaintiff closed his case.

Defendant's closing argument follows:

"Darkness has always had possession of this street and all I ask of you, gentlemen of the Jury, is this, is not what was good enough for your forefathers good enough for you?"

It was here necessary for the Bailiff to silence the crowds which all shouted "No" to the Defendant.

The Judge charged the Jury to return a verdict good and true. The Jury filed out.

I won't give you the Jury's verdict, I don't think that is necessary. I will only say that today there is in operation on Superior Avenue a system comprising 214 25,000-lumen lamps installed in exact accordance with the recommendations outlined in the Plaintiff's address. Even the Defendant's witnesses are forced to admit that the change has been a desirable one.

Unanimous Vote for Tax-Exemption Plan in Cairo, Ga.

WHEN a plan to exempt certain new industries from city taxes for a period of five years was put before the citizens of Cairo, Ga., at a special election recently, every vote cast was recorded in its favor. This plan was provided for by a constitutional amendment approved by the people of the state in the last general election, which must be ratified by the municipality or county before it can become operative. A special registration was necessary under the municipal law for this city election, and only 94 qualified to pass on the plan. A total of 68 votes was cast.

By this action Cairo has taken a definite stand toward encouraging industrial development here, and new industries may feel assured of a hearty welcome.

AN EGYPTIAN SCENE IN A BEAUTIFUL PAGEANT PRODUCED BY COLORED CHILDREN OF MOSELY RECREATION CENTER, CHICAGO, IN 1925

Recreation for Colored America

By Ernest T. Attwell

Field Director, Bureau of Colored Work, Playground and Recreation Association of America

THE late Booker Washington, of educational fame, took occasion often to recite his experience on an early morning ride through a Southern rural section. He met an elderly colored woman on the road who answered his question as to where she was going so early, with, "Lord 'a 'massy, Dr. Washington, I done been where I's gwine!"

Unfortunately, the journey toward recreational provision for our colored citizens is not yet so complete. Two million or more colored children have never been inside a playground, and thousands more have not yet received the benefit of guidance and leadership in play or recreational activities. The efforts toward inclusion of this one-tenth of our population in America's recreation movement are as yet in the pioneering stage.

Some progress in the direction of providing facilities and programs has been made, and a glimpse here and there of these efforts to promote wholesome play opportunities may be of interest, especially to communities where any appreciable number of colored citizens reside.

Five years ago the Playground and Recreation Association of America inaugurated its Bureau of Colored Work to stimulate among colored people an increase of opportunities for participation in local playground and recreation center programs. The leaders in this movement have been impressed by the tremendous possibility for development of the colored people in America through the recreation movement. The Negro's love for and proficiency in music and his desire for dramatic activity reflect the wealth of opportunity for serving this group in their free time. And what a contribution to the future can be made through adequate play provision for colored children as a means of guidance in health and character! Local city and town authorities and departments have only recently felt the need of some specialization in approaching the usually overlooked group in its midst with constructive, character-building recreation.

Approximately ninety cities report playgrounds in neighborhoods available to colored children. The nearly 250 playgrounds of varied types offer them an opportunity for health and happiness. About 60 cities indicate an attendance of 25,000 daily. The total value of specifically designated playgrounds in 20-odd cities is scheduled at $598,200. Some 62 cities in a questionnaire survey show recreation centers totaling 83 for colored citizens.

Many are the methods and ways in which these play fields and community centers have been established. Municipal funds, the Harmon Foundation, and private financing, in which the colored people themselves have contributed a considerable share, have been fac-

tors in the acquisition of land and buildings for community recreation.

It is difficult in many cities to estimate and discover these special phases of the general program. This is due to the fact that many municipal and city-wide recreation units are not disposed to emphasize any division along racial lines in their program of activities. However, we find a number of cities which are definitely developing programs among colored people or in the neighborhoods where they reside in larger numbers.

One of the towns in the South, recently stimulated through the field work of the Playground and Recreation Association of America to take advantage of the Harmon Foundation offer, has made splendid progress. Including the Harmon Foundation gift of $2,000 and free labor on the part of the colored citizens estimated at $800, total receipts to date have been $4,619.46. The committee have been so enthusiastic over developing the property that they have incurred a debt of over $1,300, making a total expense of almost $6,000.

The colored people have transformed a spot of weed land into a garden. Artesian water supplies the sunken garden and the wading pool. The State College of Agriculture plants the ground, and the students cultivate it. About half an acre is given over to the raising of cannas, asters, and other flowers. Another half-acre, fenced with barbed wire, contains the home-made playground equipment of see-saws, ladders, slides, and one long, smooth log about two feet above the ground which the children call the wooden horse. The log is sustained by two supports near the end and the long body hanging between has freedom to swing from side to side or up and down whenever sufficient weight rests upon it. There is also a "flying Jenny" or old-fashioned merry-go-round on the playground.

A refreshment booth has been built with material donated by merchants in the lumber industry. A large pavilion, sheltering perhaps one-fourth of an acre, has been framed and raftered with native logs cut from a clump of trees on one corner of the playground, colored workmen volunteering their services in erecting it. It is being roofed with corrugated galvanized iron. The pavilion is intended to shelter the picnics and assemblies of colored people of the entire county, who are already using this playground as their social center.

In a city in Tennessee a group of colored business men conducted athletic exhibitions which netted over $2,000 dollars in a season, with which they augmented city funds to cover the summer playground supervision for their children.

Aside from the playfield, the colored citizen, more than any other, has a special need for a recreation center that can be used for indoor activities by adults. The reason for this is that in many sections of the country he is either unwelcome or excluded from facilities offered the townspeople generally. The community house or center for colored folks has become a rather inclusive domicile. It has a rest room, library, nursery, women's club, men's club, employment and housing agency, cultural and social center, and many other things not necessarily included in a similarly named house for other racial groups.

An outstanding type of this sort of center can be found in Greenville, S. C., called the Phillis Wheatley Center. Thomas F. Parker, one of the leading white men in that community, referring to the creation of this center, said at the last National Recreation Congress: "The Negroes, in the past, in this community have had no place where they could meet, even if money were provided for running expenses. Where could they meet? And so a few men got together and said 'We will provide that building.' They raised $70,000. They gave $50,000 conditionally. and they

A TENNIS COURT AND OTHER PLAYGROUND FACILITIES ADJOIN THE PHILLIS WHEATLEY COMMUNITY CENTER IN GREENVILLE, SOUTH CAROLINA

loaned $20,000 conditionally. That building was immediately put up and is the center in which the work is being conducted. So, roughly speaking, there is a building which cost $70,000 and there is provided, including the library, a budget of $7,500 per annum. That building opened last January, and since then there have been during the winter months about 8,000 contacts and during the summer months, when the people were away, about 4,000. In other words, since January there have been 50,000 counted contacts."

The recreational programs in connection with the centers run the whole schedule, from athletics to the more esthetic activities. Drama in many forms is indulged in. Not only dramatics of the indoor type, where hundreds have taken part before audiences of three thousand and upwards at a performance, but outdoor pageantry. A notable example during the past summer was a pageant scene of Egyptian atmosphere put on by colored children of the Moseley Recreation Center which is conducted by the Chicago Board of Education. A children's "Mardi Gras" in the same city produced a wonderful float showing creative genius, styled "At the End of the Rainbow." Experts classed it as one of the most beautiful among three hundred competitors.

More than a hundred colored children of Richmond, Va., took part in a fairy pageant, "The Magic Path," which was the feature of a fall festival held on the campus of Virginia Union University by the Colored Playground and Recreation Association of the city. Many of the costumes were made by the children.

These activities elevate the mental attitude of the youngsters, as well as offer a chance for self-expression. Those who think playgrounds encourage only "tag" games will find the construction of original radio sets, one of the activities on the Douglass Playground in Chicago, worthy of attention.

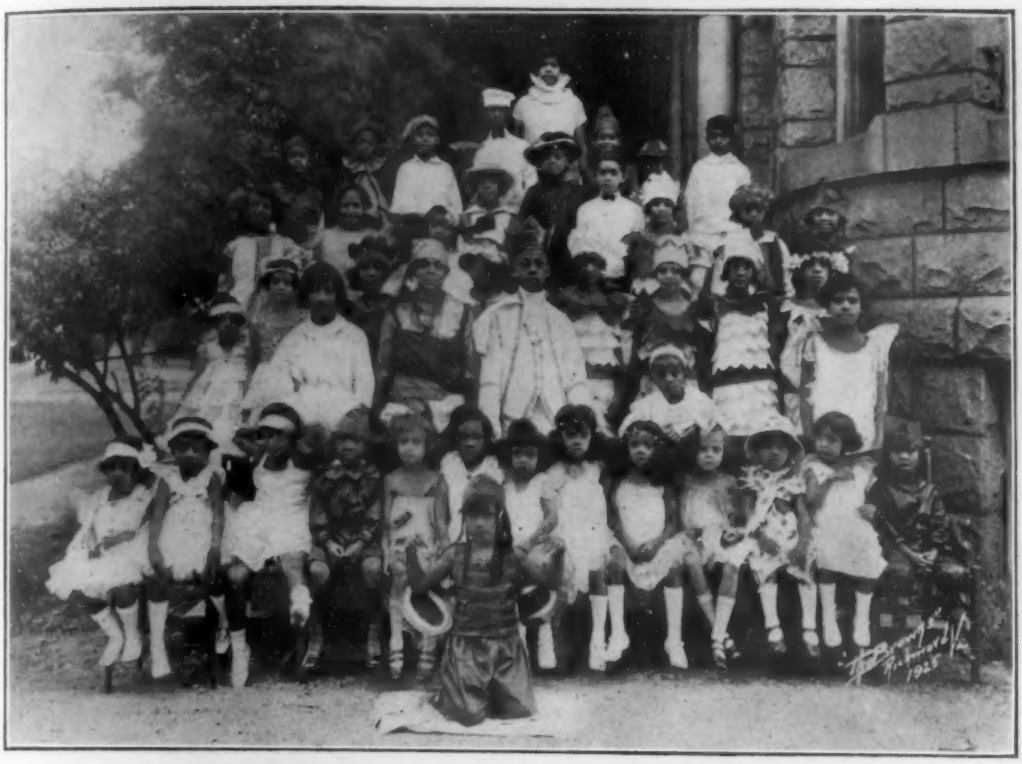
A play carnival in Memphis at Church Park, the grounds of which represented an investment of $80,000 of the city's funds, also indicated a keen appreciation of the joy of make-believe on the part of the colored children. A photographer caught an interesting section of the big parade.

The colored Letter Carriers' Band of Memphis is not a Post Office adjunct, but a real part of the adult recreation activities. For the past two summers the bandsmen have rendered a series of free concerts to the people of Memphis. Their compensation consists of a novel uncertainty, namely, if at any time during the season the Band is donated any money by public-spirited citizens, the bandsmen attend the Letter Carriers' Convention which is held every fall. There are in Memphis two recreation centers for the colored people, one of which is used almost exclusively for picnics during the summer. At the Church Park Center, which is open the year round, two paid leaders and a pianist are employed. Three summer playgrounds for colored people were operated in Memphis last year for a period of about two months.

In the many cities and states in every section of the country where I have traveled in connection with this work, I find a tendency on the part of city officials and business men to be increasingly interested in providing some sort of civic deal for the larger care and benefit of Negro citizens, not only from the standpoint of facilities, but of the actual conduct of the recreational program. Many colored assistants to the general recreation executive are employed whose business is the stimulation of increased interest and participation on the part of colored children and adults in the wholesome use of leisure.

Most outstanding men of broad vision seem to agree with the Hon. Robert Lassiter of Charlotte, N. C., a prominent southern white business man, that "the problem of recreation for colored people is no longer sectional, no longer applies alone to the South and to some of the big cities in the East and West. It is nation-wide, applying with equal force to Sacramento, Calif., Selma, Ala., and Saginaw, Mich. The problem whether they make good citizens in the new community lies with the community. With proper attention to recreational facilities, they will make you good citizens. Improper attention to that, and neglect and abuse of it, will make a criminal population."

This observation of Mr. Lassiter amounts almost to a challenge. Getting people to contribute and supply facilities for their local programs seems to come only after organized recreation has been demonstrated through field specialists such as are supplied in limited numbers by the Playground and Recreation Association of America. The maintenance of such a staff to conduct campaigns and organize social recreation and musical and dramatic groups among the colored people in various communities must be met by public funds or private contributions from those who can visualize the great good that will result to America and civilization when recreational activities bring colored people together in happy, wholesome relationships, develop the social instinct, promote good-will, and create a higher type of Negro citizenship.



CHILDREN WHO TOOK PART IN THE PAGEANT OF "THE MAGIC PATH," PRESENTED BY THE COLORED PLAYGROUND AND RECREATION ASSOCIATION OF RICHMOND, VA.
Many made their own costumes

THE COLORED CHILDREN DID VERY WELL IN THE ANNUAL CITY-WIDE CONTEST IN RADIO CONSTRUCTION, DOUGLASS PLAYGROUND, CHICAGO

Street Pavement Design in Akron, Ohio

By Edward A. Kemmler

Engineer, Bureau of Highways, Akron, Ohio

IN designing the bridges for improved roads, great pains are taken to ascertain the nature and extent of all the possible destructive forces. The bridge is designed with mathematical exactness. Also, the sizes of the openings for all bridges and culverts are computed from rainfall records, high-water marks, drainage areas, and other data, so that they may be thoroughly adequate.

When we come to the design of the pavement, which constitutes at least 80 per cent of the entire cost of the road, most engineers are still doing considerable guessing. Regardless of kind and amount of traffic, soil and climatic conditions, topography, kind of wearing surface and joint filler, the 6-inch concrete base is still the standard of many municipal engineers.

The city of Akron discarded this unscientific practice in 1919 after the annual report of the Highway Engineer for 1918, from which the following paragraph is abstracted, had been received and approved by the Chief Engineer and the Director of Public Service:

"The numerous failures, principally on county road pavements, since the advent of the automobile trucks, give rise to the conviction that we have been designing pavements according to tradition rather than with the idea of resisting the natural and artificial forces which conspire to destroy them. A 6-inch concrete base for city pavements, and 4-inch for roads regardless of the kind of wearing surface or soil conditions, has been the accepted standard for 20 years, and we are still following the custom, instead of designing the pavement, just like any other engineering structure, according to the forces which it must resist."

Since that time we have designed Akron's improvements as nearly as possible to serve the purpose for which they are constructed. One of the first things necessary to be done was the standardization of the various soils, of which we have solid rock (sandstone), gravel and sand with perfect subdrainage, sandy loam with fair subdrainage, impervious clay, and muck with poor bearing power.

Gravel and Sand Subgrades

After looking over the existing street pavements with special reference to the soil conditions, we found that 4-inch brick pavements laid on 4-inch concrete base with a sand and gravel subbase showed no depressions or waves after having been laid from four to six years. These pavements are in excellent condition today. One brick pavement in particular on Crosby Street from Hall Street to Portage Path, completed in 1912, and constructed without any base whatsoever, on sand, carried the bulk of West Hill traffic for about twelve years without losing its contour and with very little expense for repairs. A brick road in Cuyahoga County between Willoughby and Painesville, laid fourteen years ago with a 5-inch concrete base on a gravel subgrade, is almost as good as new today.

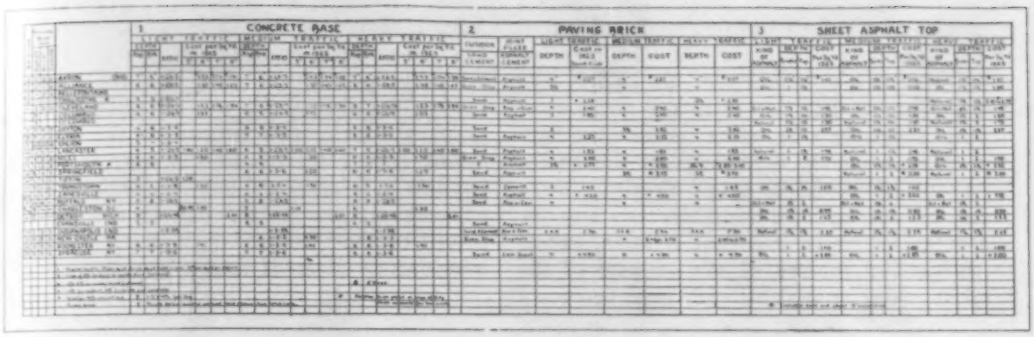
The superiority of gravel and sand as foundations for pavements will scarcely be questioned by any road-building engineer. The only questions arising are those bearing on the kind and depth of the base. There is no danger from upheaval in the spring due to frost action, and consequently no necessity for designing the slab against bending forces. The chief function of the base is to form a suitable crown for contour and to keep the material in the natural foundation in its place. A 3-inch black base may be just as effective as a 6-inch concrete base. It has been demonstrated that a sheet asphalt street laid on a bituminous base will not develop temperature cracks, whereas the contraction cracks in concrete base are almost certain to be extended through the asphalt wearing surface, if base and asphalt are laid during the same season.

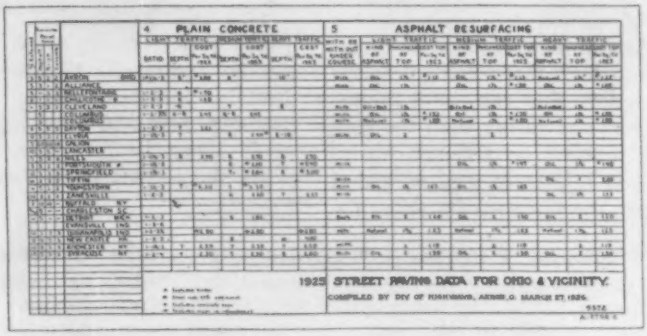
Sandy Loam Subbase

Sandy clay or loam offers a somewhat different problem. This absorbs moisture very rapidly, producing frost action in the spring. Vitrified tile subdrains will help to reduce the amount of moisture, but additional strength is required in the base to resist the tensile stresses arising from frost action, due to such percentages of moisture as cannot be eliminated by underdrainage.

Clay Soil Subbase

It is practically impossible to improve a clay soil by subdrainage. The excavation might be carried to a depth of four to six inches below the subgrade, and a system of cross-drains and a subbase of screened gravel or crushed stone





provided to replace the clay, which would doubtless improve the situation; or the concrete base can be strengthened by increasing the depth or reinforcing with steel to resist the destroying forces. Examples of asphalt pavements with 6-inch concrete base laid on clay soil lifted as much as two to three inches by frost, are not rare. They usually settle back to the original level after the frost is all out, but the intense stresses caused by such action have not improved the concrete base.

Cities	Proportions	Traffic: Light Depth Asph. Inch	Light Depth Brick Inch	Medium Depth Asph. Inch	Medium Depth Brick Inch	Heavy Depth Asph. Inch	Heavy Depth Brick Inch
Akron	1:2½:5	7	6	7	6	7	6
Alliance	1:2½:5	6	6	7	6	8	6
Chillicothe	1:2½:5	5	5				
Cleveland	1:2½:5	6	6	7	6	8	7
Columbus	1:2½:5	6	6	6	6	6	6
Dayton	1:3 :6	6	6	6	6	6	6
Elyria	1:3 :5	6	6	7	7	8	8
Lancaster	1:2½:5	6	5	6	5	7	6
Niles	1:3 :5	6	6	6	6	6	6
Portsmouth		6	6	6	6	7	7
Springfield				6	6	6	6
Tiffin	1:2½:5	5					
Youngstown	1:3 :6	6	6	6	6	6	6
Zanesville	1:2 :4	6	6	6	6	8	6
Buffalo N. Y.	1:2½:5	8	8	8	8	8	8
Charleston, S. C.		4		5		6	
Detroit, Mich.	1:2½:4½	8		8		8	
Evansville, Ind.		5	5	6	5	6	5
New Castle, Pa.					6		8
Rochester, N. Y.	1:3 :6	6	6	6	6	6	6
Syracuse, N. Y.	1:3 :6	7	7	7	7	8	8

Muck Subbase

Muck soil is usually hopeless. We have in Akron certain areas that appear to be bottomless pits filled with black muck which acts like a rubber sponge and cannot be stabilized in any known manner. Some pavements have been constructed in the usual manner and have settled from a few inches to two feet in the course of four or five years. Summit County engineers are now attempting to build a brick road over one of these muck deposits. They have dumped no end of gravel and clay on the site of this road, but it disappears about as rapidly as it is hauled in. Eventually they will be able to get the soil into a state of equilibrium, but it may be necessary to build a temporary gravel road and run traffic over it several years before a permanent improvement can be attempted.

The table above shows the depth of concrete base used in 1925 on roads having solid rock or sand and gravel subbases in a number of cities in and around Ohio. Only nine of these twenty-one cities take traffic conditions into account in designing the base.

Akron Paving Practice

In Akron we have designed our foundations

in accordance with soil conditions, using a minimum of a 6-inch base on sand and gravel and a maximum of 8 inches on clay, together with steel bar reinforcement to bridge soft areas. For the detection of hidden weaknesses in the subgrade, the same is divided into convenient sections, depending on the grade, by means of earth dams and flooded for 24 hours. So far we have not taken the character and extent of traffic into consideration, except as to wearing surface, chiefly because of the feverish speed at which it has been necessary to proceed with paving improvements since the war, affording too little time for the study of this element of the design.

The cost of paving has tripled in fifteen years. It is now so high that vacant property in the outlying sections that can stand the assessment is the exception rather than the rule. If a 4- or 5-inch concrete or a 6-inch water-bound macadam base laid on a sand or gravel subbase will produce the same results under the lightest traffic as the standard 6- or 7-inch subbase, it would appear to be good business to use the cheaper construction, and save 50 to 60 cents per square yard for the property owner. Further saving can be made by using 3- or 3½-inch brick instead of the standard 4-inch paving brick. In this way it will be possible to bring paved streets within the reach of such sections of the city as now are deprived of them because they cannot stand the assessment. Even if such a pavement should last only fifteen years, the amount saved with compound interest would pay for the resurfacing with asphalt when it is worn out.

This leads to the query, "Why not use 8- or 9-inch gutters on all street pavements so they can be resurfaced to better advantage, incidentally preventing many automobiles from climbing them and knocking down lamp-posts, street signs, trolley poles, etc.? The author offers these remarks as food for thought and discussion.

Automatic Pumping-Stations for Grade Crossings

AUTOMATIC pumping-stations for the collection and disposal of storm water were recently installed jointly by the Detroit, Toledo & Ironton Railroad and the Commissioners of Wayne County, Mich., for operation at seven of ten highway grade-crossing separations just completed on the northern division of the railroad. These stations were designed to solve the problem of adequate storm-water drainage in view of the low level resulting from depressing the highways.

Concrete pump-houses were erected, containing electrically driven pumps operating from local power lines. Concrete sumps, sunk about 15 feet below the pavement, collect the water from catch-basins located at intervals along the line of the depressed highways, the water being diverted underground through vitrified tile drains. Other catch-basins above the pump-house floors, but below railroad grade, provide receptacles for the water as it is pumped from the sumps, and are sufficiently elevated to allow gravity flow through vitrified pipe into drainage ditches under the tracks.

American Well Works pumps are located at six of the crossings, and all pump-houses are equipped with General Electric motor drive with automatic control. A typical installation consists of two 8-inch centrifugal pumps within the pump-house, which empty the 17,800-gallon sump. Each pump has a capacity of approximately 860 gallons a minute, and is driven by a 10-horsepower motor.

GRADE CROSSING OF D. T. & I. RAILROAD, SHOWING AUTOMATIC PUMPING-STATION AT LEFT

Experiences with Cross-Connections in Chicago

By Arthur E. Gorman

Chief Sanitary Engineer, Division of Water Safety Control, Bureau of Engineering, Department of Public Works, Chicago, Ill.

THE history of American water-works is marred by the record of many serious outbreaks of typhoid fever and other intestinal diseases resulting from contamination of public water-supplies by polluted water which entered the distribution system through cross-connections. As an aftermath of these experiences, health and water-works officials in this country will now generally be found in agreement on a policy requiring a physical disconnection of the public water system from all other water systems. While the writer is in full accord with this principle for new installations, he is of the opinion that a rigid enforcement of this policy may not infrequently impose a severe hardship upon certain industries and require expenditures quite out of proportion to the potential danger to the public health. This position is taken after two years' intimate contact with the work of eliminating cross-connections in the Chicago water-works system.

In February, 1925, under the direction of the writer, a systematic survey of cross-connections was begun by the Chicago Department of Health, and it is still in progress. Very much to our surprise, 491 illegal connections were found in the twenty-three months ending January 1, 1926. A compilation of these connections by size and types is given in the following table:

Size Inches	Type of Cross-Connection		Total	Per Cent of Total
	Direct	Indirect		
½	4	17	21	4.3
¾	22	31	53	10.8
1	13	19	32	6.5
1¼	4	34	38	7.7
1½	11	7	18	3.7
2	48	57	105	21.4
2½	10	8	18	3.7
3	25	32	57	11.6
3½	1	0	1	.2
4	32	37	69	14.0
5	1	0	1	.2
6	13	24	37	7.5
8	4	10	14	2.9
10	1	3	4	.8
12	3	11	14	2.9
14	0	3	3	.6
15	1	1	2	.4
16	0	2	2	.4
18	1	1	2	.4
Total	194	297	491	100.0

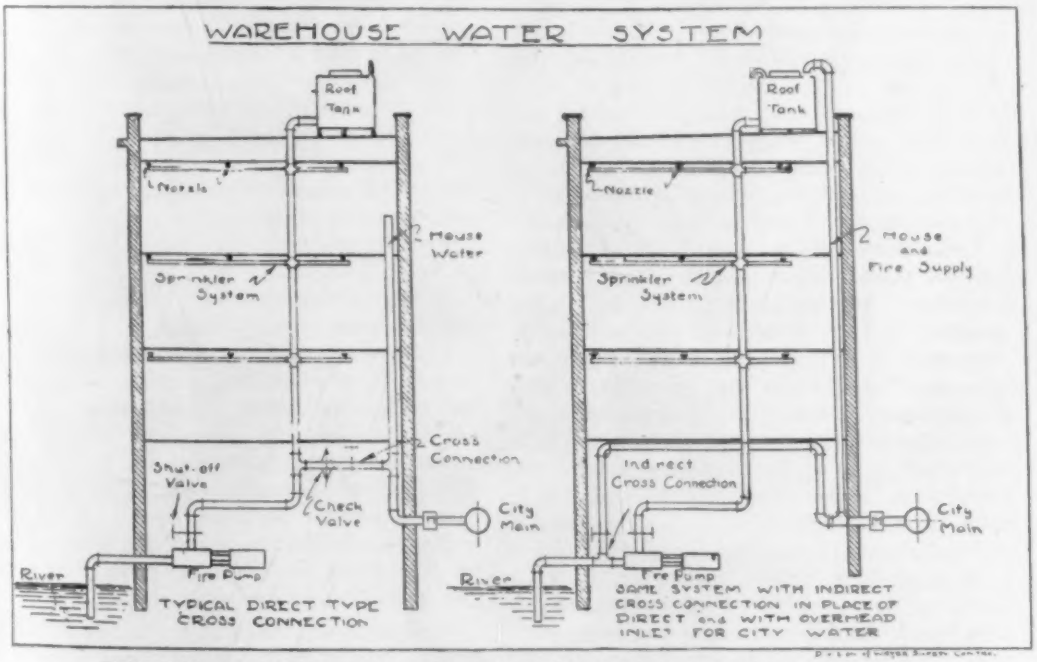


DIAGRAM 1.—SHOWING TWO TYPES OF CROSS-CONNECTIONS IN A WAREHOUSE

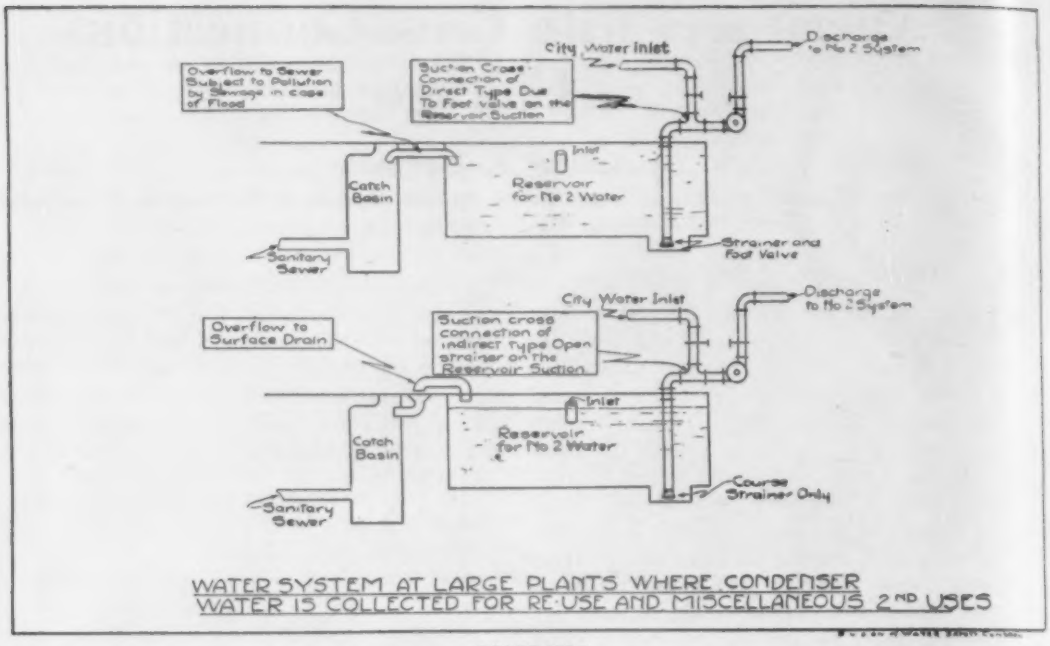

City Water Inlet
Discharge to No 2 System
Overflow to Sewer Subject to Pollution by Sewage in case of Flood
Suction Cross Connection of Direct Type Due To Foot Valve on the Reservoir Suction
Inlet
Catch Basin
Reservoir for No 2 Water
Sanitary Sewer
Strainer and Foot Valve
City Water Inlet
Discharge to No 2 System
Overflow to Surface Drain
Suction cross connection of Indirect type Open strainer on the Reservoir Suction
Inlet
Catch Basin
Reservoir for No 2 Water
Sanitary Sewer
Course Strainer Only
WATER SYSTEM AT LARGE PLANTS WHERE CONDENSER WATER IS COLLECTED FOR RE-USE AND MISCELLANEOUS 2ND USES

DIAGRAM 2

Before demanding the breaking of cross-connections, the health or water-works official may well investigate the reasons for their existence. He will usually find that these may be classified in three groups:

1. Inability of the public system to supply adequate pressure or sufficient quantity
2. A desire for economy
3. Convenience of operation

Obviously, in cases where the public water-works system cannot render adequate service, the consumer's problem is entitled to every consideration consistent with safety to the public health; in fact, the success of any campaign against cross-connections will depend to no small degree upon the attitude of the health or water-works department in cases of this kind.

Cross-connections in large buildings and industrial plants cannot ordinarily be removed immediately without incurring risks to life and property, and the problem of the consumer in these cases is no slight matter. It has been our experience in Chicago that by taking proper precautionary measures in the meantime, a patient attitude on the part of the public official will result in an early compliance with recommendations. It must be borne in mind that in many cases the expense involved is considerable and that those in immediate charge must obtain permission from general managers, or even boards of directors, before full compliance can be effected. In the instance of one large company in Chicago, which was being operated under the direction of a receiver appointed by the Federal Court, it was necessary to obtain authority from the Court to incur expenditures found necessary to make equivalent substitution for a dangerous cross-connection removed.

Where a dual water system is used merely for the sake of economy, the public supply being cross-connected for use in emergencies, the conditions are entirely reversed and the demand for an immediate separation from the city water system is not unreasonable. In such cases the safety of the public water-supply may have been continuously in jeopardy while the city stood ready to give emergency service to the private consumer, for which its remuneration might be insignificant.

Cross-connections of convenience should never be tolerated.

In Chicago cross-connections are divided into two classes:

1. *Direct Cross-Connections,* where there is or may be a differential pressure between the two systems, permitting a flow from the secondary system into the city water lines in case of leakage past a valve or valves.

2. *Indirect Cross-Connections,* where the two systems are physically connected, but prevailing conditions are such that the possibility of flow from the secondary system into the city water lines is extremely remote.

A physical separation of the two systems has always been requested where direct cross-con-

nections are found. The justice of this stand has been uniformly recognized, and with a few exceptions prompt compliance with the regulation of the Department of Public Works, forbidding cross-connections, has followed the official notification. This regulation, which appears in the Rules and Regulations governing service pipe installations, issued by the Division of Water Pipe Extension, Bureau of Engineering, is as follows:

"Wherever a system of water-supply piping is installed either inside or outside of buildings, in streets or alleys or other public or private property which receives its supply from any well, cistern, river, pond, lake, or any other source except the water-supply system of the city, such systems shall be kept entirely separate from and no connections of any kind, either direct or indirect, shall be made with any pipe or system of piping which receives its supply from the water-supply system of the city."

Early in the campaign the Department made a valuable contact with the Chicago Board of Fire Underwriters, whose Chief Engineer adopted a policy which is not only legally sound, but also has been of material assistance in certain cases where stubborn resistance was anticipated. He advised that where the Underwriters had allowed credit on the insurance rate for the existence of an illegal connection with the public water system, this credit would be removed when notification of the illegal cross-connection was received.

The cross-connection investigation was not confined to connections between secondary water systems and the public water-supply, but was extended to all types of connections through which water used by the public might be exposed to contamination. This led into a special study of swimming pools, house filters, ice plants, condensers, underground reservoirs, roof tanks, and many other water systems common to modern standards of living and to industries where large quantities of water are consumed.

As sewage is the most important source of infection, special attention was given to connections between water systems and waste connections to sewers. This phase of our problem was a particularly acute one because in certain sections of Chicago the capacity of the sewer system is inadequate and following heavy rainfalls serious flooding is a frequent occurrence. The public health officer in a city where the sewer system is inadequate may well consider all points below the elevation of flood level in sewers as a zone of potential pollution and be governed accordingly. Obviously, the manufacture of ice or the storage of food supplies in places below sewer grade in districts subject to flood is jeopardizing the public health.

While it is self-evident that the health and water departments should cooperate fully to safeguard the public water-supply, it is my opinion that there can and should be established definite limits of responsibility for these two agencies. It is my belief that the water department should be responsible for the sanitary quality and safety of the public water-supply up to the point of delivery to the consumer, either to the curb line or to the inside

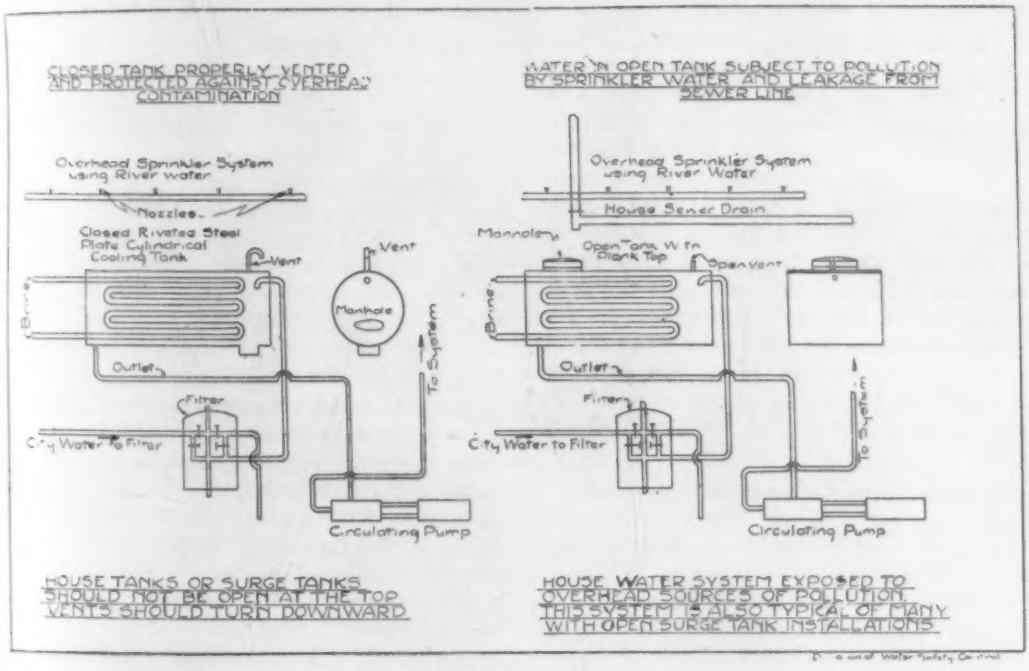

CLOSED TANK PROPERLY VENTED AND PROTECTED AGAINST OVERHEAD CONTAMINATION
Overhead Sprinkler System using River water
Nozzles
Closed Riveted Steel Plate Cylindrical Cooling Tank
Vent
Vent
Manhole
Brine
Outlet
To System
Filter
City Water to Filter
Circulating Pump
HOUSE TANKS OR SURGE TANKS SHOULD NOT BE OPEN AT THE TOP VENTS SHOULD TURN DOWNWARD
WATER IN OPEN TANK SUBJECT TO POLLUTION BY SPRINKLER WATER AND LEAKAGE FROM SEWER LINE
Overhead Sprinkler System using River Water
House Sewer Drain
Manhole
Open Tank with Plank Top
Open Vent
Brine
Outlet
To System
Filter
City Water to Filter
Circulating Pump
HOUSE WATER SYSTEM EXPOSED TO OVERHEAD SOURCES OF POLLUTION. THIS SYSTEM IS ALSO TYPICAL OF MANY WITH OPEN SURGE TANK INSTALLATIONS.

DIAGRAM 3

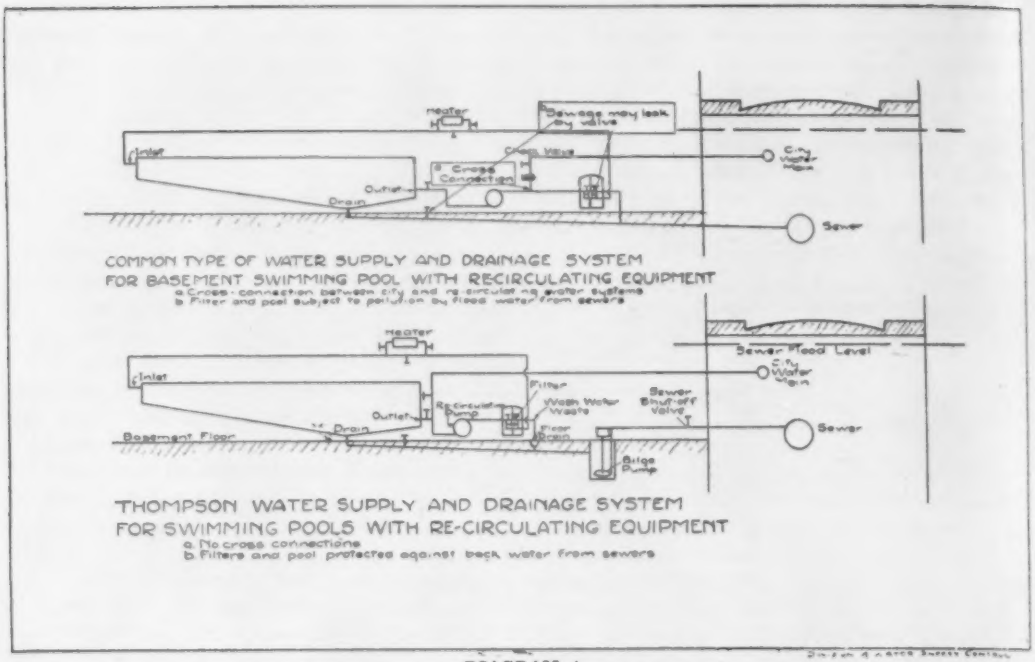


DIAGRAM 4

of the meter. Therefore, this department should be responsible for all cross-connections with the public water distribution system. On the other hand, the uses which are made of water by the consumers, and the handling and exposure of this water after delivery to the meter, are matters of concern to the health department, since the health of large groups of persons may be so jeopardized. For example:

The water-supply to a large hotel as delivered is safe. The hotel management, for reasons of its own, elects to filter this water through pressure filters and to store it in an open cooling tank located in the basement, from which tank the chilled water is re-circulated throughout the hotel by special pumping units. (See diagram No. 3.) Sewage from an overhead house line, passing through the basement, drips into the tank, with the result that a severe outbreak of diarrhea develops among patrons of the hotel. The water department is, in my opinion, in no way to blame, responsibility for the water system within the hotel being a function of the health department.

Typical Cross-Connections Discovered

Although the Chicago survey developed a myriad of cross-connection conditions which had to be worked on individually, in accordance with the local details, I have chosen to illustrate by diagrammatic sketches typical cases which are considered of special importance.

Diagram No. 1 is typical of a great many cross-connections found at warehouses located along the Chicago and Calumet Rivers and their tributaries. The cross-connections in these cases were usually made through carelessness or with the object of saving the expense of a special city water line to the roof tank, which expense, of course, had to be met later to give the protection desired.

Where difficulty with clogging of the river suction to the fire-pump was experienced, the indirect type of cross-connection shown to the left was not objected to, provided the fire-pump was of the reciprocating type. In case the fire-pump was a centrifugal pump, the indirect cross-connection was not permitted during the winter season when danger of freezing the river suction existed. Note also that no valve is permitted between the pump and the river suction, so that contaminated water from the roof tank cannot enter the indirect cross-connection to the city main.

Diagram No. 2 illustrates another type of indirect cross-connection not objected to in cases where the supply of city water is inadequate. The system illustrated is typical of many existing at packing plants in the Union Stock Yards where water which is passed over condensers is collected in reservoirs and re-used in what is called the No. 2 system. This water may be re-used in the condensers or pumped to various plants for general washing and cleaning purposes, where the quality of the

water is not of prime importance. The No. 2 system is also essentially the emergency reserve for fire-fighting purposes. To require a separation of these indirect cross-connections would cost the companies concerned many thousands of dollars, which expense would be out of proportion to the risk to the public health involved. In several cases dangerous connections were found, and it may be said to the credit of the companies concerned that they acted promptly to correct these conditions. Of course, where the pump in the No. 2 system was of the centrifugal type, and the suction from the reservoir was equipped with a foot-valve for priming purposes, what appeared to be an indirect cross-connection was in reality a direct cross-connection. In these cases removal of the foot-valve and any valves between the reservoir suction and the centrifugal pump was required. Overflow connections to sewers were altered, as shown in the diagram, so that the possibility of sewage flowing back into the reservoir was eliminated.

Diagram No. 3 illustrates a typical installation where city water is stored in a tank and re-circulated within a building or plant. In a number of plants open surge tanks were used without due care being taken to see that there were no sources of contamination above the tank. In general, the use of open tanks is to be discouraged in favor of closed tanks properly vented. In any case, before the location of a storage tank is selected it should be made certain that the water in the tank will not be affected by possible leakage from a sewer drain or sprinkler water from the fire system.

Diagram No. 4 is typical of the swimming pool installation in many institutions in Chicago. To begin with, it should be noted that the swimming pool and the filters are directly connected to the sewer and located below the flood level. These conditions are open invitations to trouble in case of leaking valves. In one institution a report was received that following heavy rain-storms sewage had even backed up through the floor drains under shower-baths.

To eliminate these direct connections with sewers, the Department of Health recommends that all drainage from swimming pools, and the wash-water from filters, discharge into open sump or bilge tanks, and that this waste water be re-pumped to the sewers. Of course, to prevent the flooding of the basement, the discharge line to the sewer should be equipped with a shut-off valve.

In Chicago it is very common for large office and apartment buildings to filter the city water-supply, using pressure filters. Frequently these filters are located in the basement, and the wash-water waste line from the filter is directly connected to the sewer system. Where such conditions exist, flooding of the sewer might result in gross pollution of the filter in case of a leaky valve. It has been the policy of the Department to require filter waste lines to discharge either into open floor drains or into a funnel opening connected to the drain.

It is the opinion of the writer that architects and designers should give more attention to the location and design of swimming pools and pressure filter units. Where practical, these tanks should be located above flood level in the sewer system.

Attention is directed to the cross-connection shown between the city water system and the re-circulated water in the swimming pool system. Such connections were found to be common practice. As a rule, pressure in the re-circulating system is not over 20 pounds per square inch, and most of the time the city pressure is in excess of this; however, there are periods when the reverse would be true, and if valves are not tight, re-circulated water might enter the city system. This cross-connection is apparently made to permit washing of the filter with the city water and allow for filtering of the city water used for filling the tank or for make-up purposes. Where such cases existed, the Department of Health recommended a change in piping connections so that the city water, instead of being connected on

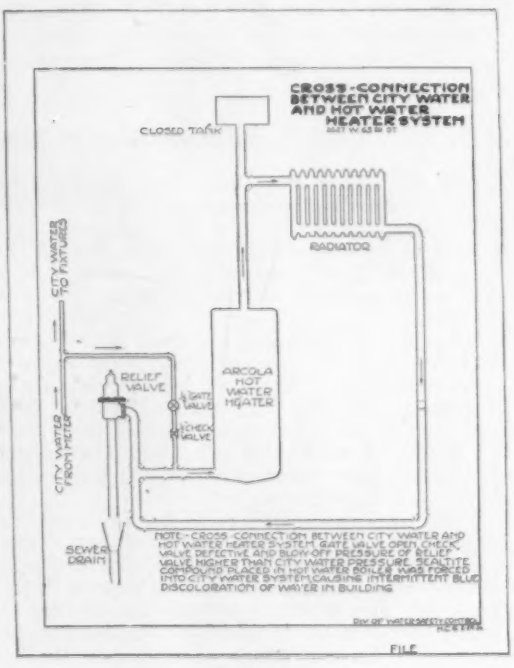

CROSS-CONNECTION BETWEEN CITY WATER AND HOT WATER HEATER SYSTEM
CLOSED TANK
RADIATOR
CITY WATER TO FIXTURES
CITY WATER FROM METER
RELIEF VALVE
ARCOLA HOT WATER HEATER
SEWER DRAIN
NOTE - CROSS CONNECTION BETWEEN CITY WATER AND HOT WATER HEATER SYSTEM. GATE VALVE OPEN, CHECK VALVE DEFECTIVE AND BLOW-OFF PRESSURE OF RELIEF VALVE HIGHER THAN CITY WATER PRESSURE. SCALITE COMPOUND PLACED IN HOT WATER BOILER WAS FORCED INTO CITY WATER SYSTEM, CAUSING INTERMITTENT BLUE DISCOLORATION OF WATER IN BUILDING.
FILE

DIAGRAM 5

the discharge of the re-circulating pump, is connected on the suction. This system was developed in Chicago by Plumbing Inspector John R. Thompson, and has met with general favor. It will be noted that back-pressure against the city water-mains is not possible, on account of the open swimming pool "floating on the line." With this system, however, all water must pass through the re-circulating pump. The filters can still be washed under city pressure, the wash-water passing through the re-circulating pump. It might be necessary to arrange to disconnect the drive-shaft at the motor on the re-circulating unit or to change the type of motor to permit the operation of the pump under the change of conditions.

Another common type of cross-connection in Chicago is between hot-water and boiler-feed systems and the city mains. Since only city water is used in these systems, the danger to the public health is reasonably remote, providing no injurious foreign substances are used for treating the water within the building; however, in any case there is need for protecting the meter against exposure to hot water on account of the danger of the warping of the hard rubber parts in the meter. Diagram No. 5 illustrates a piping system to a hot water heater, which was found, upon investigation, to be the cause for a complaint of blue water coming from the taps within the building. At the address referred to there were three stores. The city water entered in the basement of the owner's store, and each tenant's space was equipped with a small hot-water system, as shown in the diagram. Two of the tenants complained of blue water, but consumers in adjacent premises were not troubled in this way. An investigation revealed the fact that the gate-valve to the heater in one of the stores was open and that the check-valve was not operating. The investigator also learned that on account of water leakage from one of the radiators, the landlord had, prior to the receipt of the complaint, purchased a patented product for sealing radiator leaks, composed chiefly of shellac, which, in accordance with instructions, he placed in the heater. This sealing compound was made up with a blue dye, and consequently when the pressure in the hot-water system was greater than in the cold-water system, the blue dye passed from one system to the other and appeared in the lavatories in two of the stores. It was indeed fortunate that this dye was used and that the compound contained no poisonous material. In talking with certain plumbers who have had a wide experience with conditions in Chicago, the writer was informed that it was entirely probable that there were at least 50,000 similar connections between hot-water and boiler-feed systems and the city mains.

In conclusion, it is desired to state that while no cases of typhoid fever in Chicago have been directly traceable to cross-connections, the very existence of nearly 500 potentially dangerous cross-connections with other sources of supply indicates the importance of careful inspection and follow-up work by health and water departments in large cities where water-supply systems of many types may be found.

ACKNOWLEDGMENT.—From a paper read before the Illinois Section, American Water Works Association, at Urbana, Ill.

Fire Departments in Parades—A Dangerous Practice

THAT serious consequences are likely to result from the increasing tendency to use fire-fighting apparatus and fire-department personnel in parades and exhibitions is pointed out in a recent Fire Prevention Bulletin of the Chamber of Commerce of the United States. To quote in part:

"It is by a combination of breakdowns in normal functions that accidents turn into disasters. The removal of fire apparatus from the fire-houses for outside activities may nullify the efforts of the taxpayers who are spending considerable sums of money to maintain a quick-acting, efficiently equipped fire department to protect property against hostile fire at all times.

"Most fire departments pride themselves on the speed with which they respond to alarms. Elaborate fire-alarm systems are installed, and automatic devices in fire-stations are put in at expense to the public, all with the desire to make the response as nearly instantaneous as possible. If the apparatus is on the streets, it can be reached only by courier, telephone, or othes means involving a loss of valuable minutes at the time of a fire. The best of human arrangements for keeping in touch with the apparatus during a parade cannot avoid inevitable delay in responding to an alarm. Moreover, when apparatus is in parade formation, with people assembled for reviewing the parade, a quick order to break ranks may result in personal injury to participants in the parade as well as to spectators. It requires no stretch of the imagination to realize that serious consequences could arise from such a situation. Small fire losses are likely to become large ones, and even conflagrations may result from this unnecessary delay.

"Of forty-one fire chiefs questioned on the subject of participation of fire departments in parades, all but five were opposed to the practice. It is interesting to note that three of the forty-one chiefs had the disappointing experience of fire breaking out while the apparatus was in parade."

Diesel-Engine-driven Pumps for Water-Works

By Rodney D. Hall

THE diesel engine as a prime mover, because of its exceptionally high fuel economy, naturally suggests itself for use in water-works installations. The water-works field has the great advantage of the long and wide experience of the oil pipe line companies in the use of diesel-engine-driven pumping units of all the standard makes, pumping against line pressures averaging 700 pounds per square inch, a most severe 24-hour service, 365 days a year. The simplicity, reliability, and flexibility of diesel-engine drive for pumping units are now established.

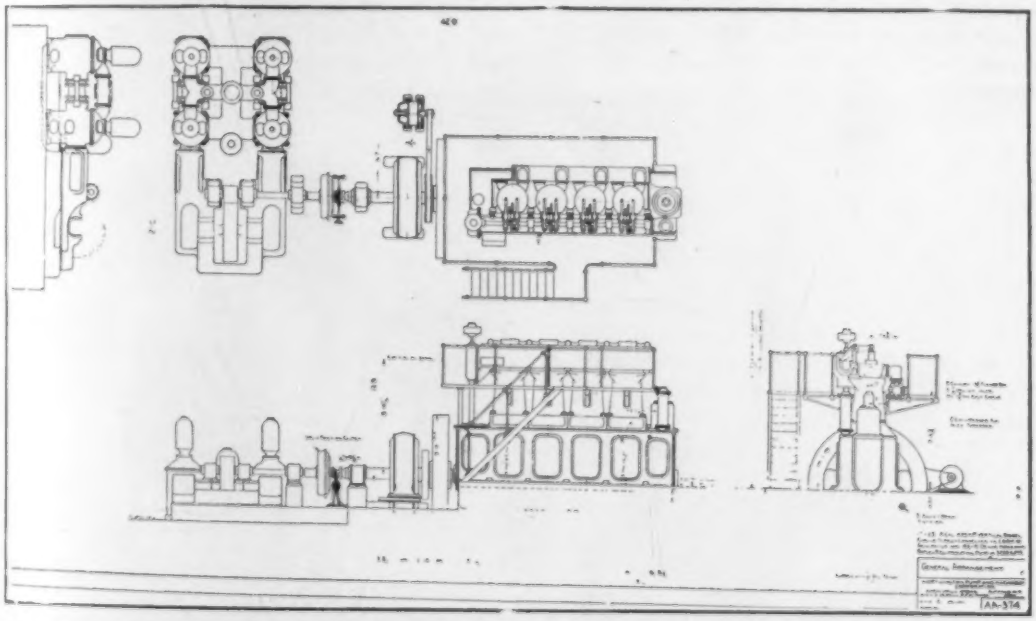
In the field of steam-driven pumping units it has been found that approximately 600 water horsepower represents the maximum water-works requirements in horizontal flywheel pumping machinery. This is equivalent to a pump capacity of approximately 15 million United States gallons of water in 24 hours pumped against a total water pressure of 100 pounds per square inch, with proportionately larger capacities if pumped against lower water pressures.

In the vertical triple-expansion flywheel type of steam-driven pumping machinery, the maximum power output in useful work for which standard patterns are available, is approximately 2,000 water horsepower, equivalent to an approximate unit capacity of 50 million United States gallons of water per 24 hours pumped against a total water pressure of 100 pounds per square inch.

The present standard sizes of Worthington diesel engines start at 30-h.p. single-cylinder units, and are at present contemplated to extend up to 9,000-h.p. six-cylinder units. From this it can be seen that the commercial unit sizes of diesel engines exceed by a large margin the maximum unit power available in the reciprocating steam-driven pumping-engine field.

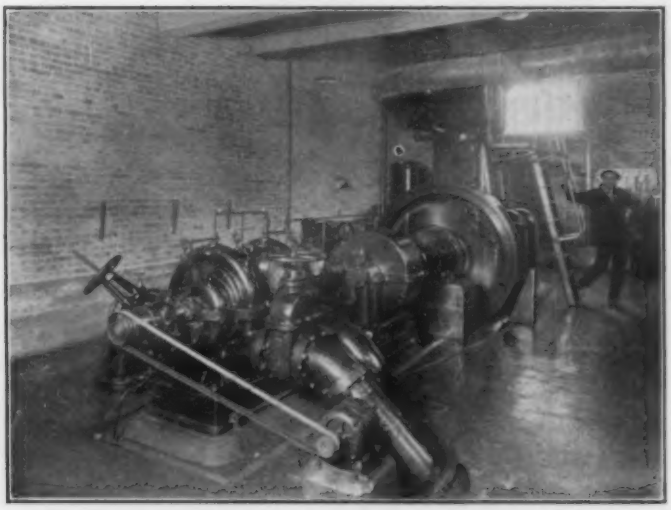
In steam-driven pumping machinery the steam economy for given steam conditions increases considerably with the size of the unit, while diesel-engine-driven pumping units in the small sizes are within approximately 10 per cent of the economy of the largest units. This feature is of great importance.

The fuel consumption of the entire line of



17- x 25-INCH, FOUR-CYLINDER, 400-HORSEPOWER VERTICAL DIESEL ENGINE, DIRECT-CONNECTED TO A 266-KILO-WATT GENERATOR AND A 16½- x 18-INCH DEAN HORIZONTAL RECIPROCATING PUMP OF 3,200-G.P.M. CAPACITY DESIGNED FOR SIOUX FALLS, S. DAK., WATER-WORKS

Since this paper was prepared the city of Sioux Falls, S. Dak., has purchased a McIntosh-Seymour oil engine and a Worthington power pump



DIESEL ENGINE OPERATING CENTRIFUGAL PUMPS THROUGH REDUCING GEARS, IN WATER-WORKS AT LA PORTE, IND.

Worthington diesel engines of from 30 h.p. up, is less than 0.5-pound of oil per brake-horsepower hour, containing 18,500 B.T.U. per pound. On the basis of 0.5-pound per hour fuel consumption, or 9,250 B.T.U. per brake-horsepower hour, a "duty" is developed in the oil engine prime mover equivalent to approximately 215 million foot-pounds of work per million B.T.U.

If this prime mover drives a centrifugal pump through speed-increasing gears, with the pump and gears giving a combined efficiency of 80 per cent, the resulting over-all duty is approximately 172 million foot-pounds of work per million B.T.U. consumed.

If the same prime mover is direct-connected to a reciprocating power pump having 88 per cent efficiency, an over-all duty of approximately 190 million foot-pounds of work per million B.T.U. is obtained.

B.T.U. duties of 172 and 190 million foot-pounds developed by the small-size diesel-engine-driven pumps referred to above, are in the range of the maximum economies of the largest vertical triple-expansion reciprocating steam pumping-engines, using the highest suitable steam pressures and superheat. A B.T.U. duty of 190 million foot-pounds corresponds to a duty of approximately 220 to 225 million foot-pounds per 1,000 pounds of steam.

For use in water-works practice, the diesel engine is suitable for:

Direct connection to reciprocating power pumps
Direct connection to screw pumps for low heads
Direct connection to electric generators for use in driving motor-driven pumps
Direct connection to a combination of electric generator and geared reciprocating power pump
For connection through speed-increasing gears to centrifugal pumps for pressures for the customary water-supply.
For driving pumps through belt or chain drive.

Sioux Falls, S. D., Installation

A typical instance of a combination of direct-connected diesel engine, generator, and geared reciprocating pump for municipal water-works service is the pumping equipment for which bids were opened at Sioux Falls, S. Dak., on May 25 of this year. The Sioux Falls specifications, as prepared by Maury & Gordon of Chicago, consulting engineers for the city, include a 400 - brake - horsepower vertical oil engine, a 270-kw. generator mounted on the oil engine shaft, a belt-driven exciter, and a 3,200-United-States-gallon-per-minute horizontal reciprocating power pump driven by means of a gear and pinion through a clutch from an extension of the oil engine shaft. When this unit pumps water at the rate of 3,200 United States gallons per minute against a total head of 190 feet, the electric generator is also required to deliver 160 kw. at the same time. On the basis of a combined approximate total of 370 useful horsepower in water pumped and electric energy developed by the Sioux Falls unit under the above conditions of service, the prices of the several bidders for the complete unit delivered and erected on foundations built by the purchaser, ranged from approximately $116 to $130 per useful delivered horsepower.

The present purchase of this type of pumping equipment by the city of Sioux Falls is largely due to the performance of two Busch oil-engine-driven power pumps installed in the same water-works in 1916. Based on fuel oil at 5 cents per gallon, these units give a fuel and lubricant cost of .433-cent per 1,000 gallons pumped against 72 pounds water pressure.

La Porte, Ind., Installation

There is another recent instance of one oil-engine-driven municipal pumping unit resulting in the sale of a second unit of the same type, on account of the economy, flexibility, and long life expectancy of the first 3 to 3½-million-gallon unit, installed in LaPorte, Ind., in 1923. During the year 1924 this unit pumped an

average of 2,050,000 gallons per day of approximately 14 hours, against approximately 121 feet head, at a combined cost for fuel (at 7c. per gallon) and lubricants of 0.456-cent per 1,000 gallons pumped. The second unit, installed at LaPorte in 1925, consists of a Worthington 150-h.p., two-cycle, solid-injection diesel oil engine driving a Worthington 8-inch, two-stage centrifugal pump through a speed-increasing gear. On the basis of a capacity of 3 million United States gallons of water per 24 hours against a total head of 200 feet, equivalent to approximately 105 useful horsepower, the price for the 1925 LaPorte installation on a delivered and erected basis approximates $143 per useful water horsepower.

In making money comparisons of first cost of diesel-engine-driven pumping equipment with cost of steam-driven pumps, particularly where a new plant is being considered, it should be borne in mind that the oil engine is complete in itself and does not require boiler-house, boilers, stack, coal-handling machinery, and the other numerous auxiliaries of a steam plant.

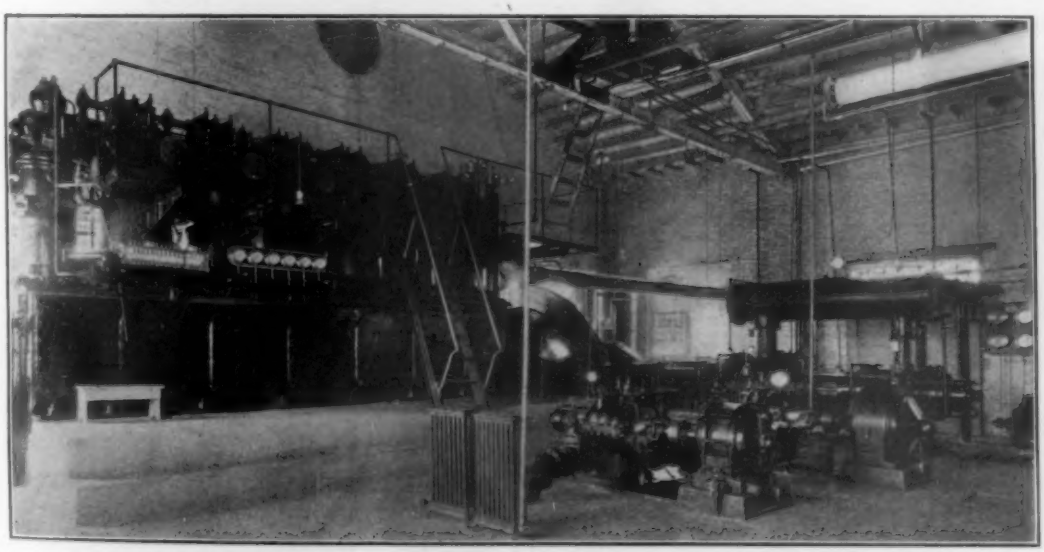
Other Recent Installations

A recent installation of a diesel-oil-engine-driven power pump for the New Britain, Conn., water-works consists of a 150-h.p., two-cylinder, solid-injection Blake type oil engine driving a 2,000-gallon-per-minute power pump against a total head of 250 feet. This unit had a guaranteed duty of 3.44 million foot-pounds of work per pound of fuel, and on the acceptance test exceeded the guaranteed performance by nearly 2 per cent.

A two-unit installation made in 1922 at Corsicana, Texas, consists of two 120-h.p. diesel oil engines, each driving a 6-inch centrifugal pump through speed-increasing gears. The capacity of each of these two pumping units is 1,050 gallons per minute against a mance by nearly 3 per cent.

A diesel-engine-driven pumping unit purchase of major importance was made by the Fourth Jefferson Drainage District of New Orleans, La., in 1925. This equipment includes eight 330-h.p., 215-r.p.m., vertical three-cylinder 17 x 25 Worthington oil engines arranged for direct connection without gears to eight 80-inch single-suction screw pumps. Two of these units will be installed in each of four pumping-stations located on the shore of Lake Pontchartrain near New Orleans. These pumps are designed to operate between heads of 4 feet and 14 feet and are capable of delivering 50,000 gallons per minute each against a 14-foot head, which is at the rate of 72 million United States gallons of water in 24 hours each. When operating against a 7-foot head, the capacity of each unit is specified to be at the rate of 102,500 gallons per minute, which is equivalent to approximately 148 million United States gallons of water in 24 hours for each unit.

ACKNOWLEDGMENT.—From a paper read before the American Water Works Association, at Buffalo, N. Y.



WORTHINGTON 600-HORSEPOWER 17- x 25-INCH DIESEL ENGINE DRIVING AIR-COMPRESSOR AND ALTERNATING-CURRENT GENERATOR IN THE MUNICIPAL WATER-WORKS AT CLEBURNE, TEXAS

Cleaner Streets at Smaller Cost

Valuable Data from Progressive American Cities

MOTORIZED "white wings" for street cleaning, as used in many cities, accomplish substantial reductions in the cost of doing this work. Easily handled, light tractors on this type of work have proved particularly effective. Street cleaning by hand is usually very costly, and consideration of costs in various cities throughout the United States and Canada shows that there is a very decided reduction in expense through the substitution of mechanical power for hand labor.

TRAILER FLUSHER OPERATING IN NEW YORK CITY

Figures from Halifax, Nova Scotia, reveal an expense of 61 cents to clean 1,000 square yards of pavement, as compared to 21 cents for machine cleaning. In Minneapolis the street patrol cleaning cost is 55 cents for a like area. Richmond, Va., is another city where power sweepers are successfully used. In fact, the development of motor sweepers has very generally superseded the older methods in every section of the country.

In Washington, D. C., is found an excellent example of motorizing the street-cleaning department. Here, as elsewhere, the hand broom and shovel with the old-fashioned carts have given way to the new order of things for the sake of efficiency. In a large number of cases, as in the city of San Antonio, Texas, motor sweepers were first a development of the horse-drawn sweeper and sprinkler carts. Instead of buying complete new outfits, the horse-drawn equipment was attached by means of a short hook-up in place of the wagon tongue so that a tractor could be used.

Tom J. Kane, General Superintendent of the Street Cleaning and Garbage Department of the city of San Antonio, writes the following report on the motorizing of the departments under his jurisdiction: "The tractors pulling converted horse-drawn sweepers are giving splendid satisfaction in maintaining the streets of our city in a clean and tidy condition. We are using fourteen Fordson tractors, each pulling a re-designed horse-drawn sweeper, with one man operating the entire outfit. Our tractors sweep a route 36 miles long and 30 feet wide in each 8-hour shift. The fuel consumption averages one gallon of gasoline an hour, while the expense for repairs is practically negligible. In fact, we have had only one general motor overhaul job during the four years we have used this equipment. Only one tractor

OLD HORSE-DRAWN FLUSHER ADAPTED TO TRACTOR HAULAGE IN DENVER, COLO.

STREET-CLEANING UNIT IN SAN ANTONIO, TEXAS, SHOWING ADAPTATION OF HORSE-DRAWN UNIT TO TRACTOR SERVICE

The building shown is the famous Alamo, built as a mission house about 1722 and used as a fort after 1793; the scene of the massacre of March 6, 1836, in the war for Texan independence

has needed rear tires during all this time. The cost of converting the old equipment so that it can be used with the tractor is but $15 for each unit. In our opinion, our method of street cleaning is about all that could be desired."

Not all of the advantage lies in the fact that tractors do their work better and at a big saving over teams, but with the tractor it is possible to keep the streets in better condition, for the same area can be swept three times as often as with a team.

Sprinkling and Flushing

Street sprinklers and flushers have always been important adjuncts to a street-cleaning department. Sprinkling at regular intervals is essential to prevent or abate the dust nuisance on pavements as well as on dirt or gravel streets. Within the last few years, however, oiling of dirt streets has replaced the use of water for this purpose in many cities and towns. It has been found that oiling has a more lasting effect, for two or three sprinklings a year are usually sufficient, and the expense is no greater than the cost of simply laying the dust with water.

In many cities power flushers are being used to excellent advantage. The type of flusher illustrated has a rectangular steel tank of 1,300 gallons capacity. Two flushing outlets are provided. These can be set at any angle, so that the street may be entirely cleaned with one passage. A rotary pump maintains a constant pressure of 45 pounds, quite sufficient to clean the streets of ordinary dirt, or may be used to flush away light slush and snow into the gutter.

Very frequently a rotary street sweeper is mounted ahead of the tractor-drawn flusher. This outfit is a particularly efficient unit. Its principal advantage is the performance of two street-cleaning jobs at one time. Operating in the midde of the street, the broom dislodges the hardened dirt and sweeps it to one side, where the flusher catches it and drives it into the gutter, leaving the street well cleaned.

Still another type of flusher that is finding considerable favor is shown in operation in the second illustration on page 178. (See THE AMERICAN CITY, January, 1926, page 19.) Here again is shown the easy conversion of horse-drawn sprinklers for tractor power. The city of Denver, Colo., operates a fleet of these flushers. The novel arrangement of the tractor controls enables the operator to ride in the usual seat of the tank. The results are interesting. Here is the comparison which is given by G. S. Duffield, Superintendent of the Street Cleaning Division, covering the cost of doing the work:

"In 1924 horse-drawn equipment was used, covering 9,473 blocks at a total expense of $4,237, or a cost of $44.60 for each 100 blocks. In 1925 we mounted five former horse-drawn flushers on tractors and washed 5,898 blocks at a total cost of $1,952.50, or $33.60 for 100 blocks. The total expense of covering the operation of one Fordson flushing outfit for the first 42 days amounted to $423.83. This outfit washed 2,016 blocks at a cost of 21 cents a block. Formerly, three horse-drawn flushers covered 120 blocks in 8 hours, or about 40 blocks each. Equipped with tractors, these same flushers easily clean 180 to 190 blocks in 8 hours. Three flushers, costing but $17.50 each to operate per shift, are equal to four horse-drawn flushers costing $20 each day. The use of the Fordson units thus saves $27.50 per day. On the night shift formerly eight horse-drawn flushers were used, while now five Fordson-hauled flushers keep the streets of Denver clean, leaving three flushers in reserve for emergency service."

In addition to the cleaning and flushing of streets, Ford equipment is being very widely used by construction and maintenance departments. From every section of the country are received records of excellent service of these units. It is true that methods of street and road work vary considerably in different sections of the country, but there is no evading the actual amount of hauling, digging, scraping, and leveling that is required on any road job. The many examples of economy in the conduct of this important division of municipal maintenance are causing city officials everywhere to adopt tractors for their street departments.

"Subsidized Housing for New York"

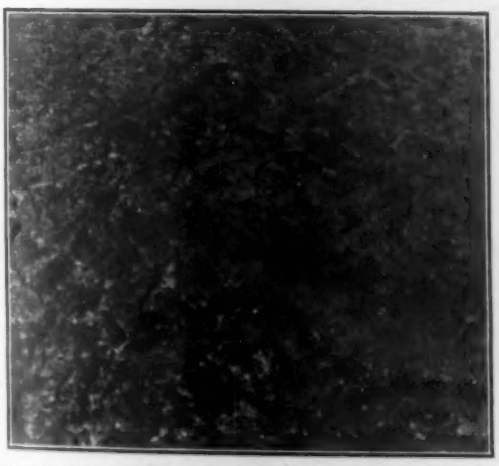
Under this heading the National Housing Association presents, in *Housing Betterment* for June, a 20-page discussion of New York State's new housing law. To those who have read the articles favorable to this legislation published in the June and July numbers of THE AMERICAN CITY, and who wish to consider the arguments which can be marshaled against it, a careful reading of *Housing Betterment* is commended. The same issue contains a series of articles on Zoning and the Courts, including a picturesque and forceful discussion of "The Shame of New Jersey."

Asphalt Macadam in New York and New England---Part II

By V. L. Ostrander

New York State Practice

In New York State, construction details have been different from the New England practice. Recently changes have been adopted to bring the work more nearly in line with the others, so that now the greatest difference lies in the hardness of the asphalt binder. New York, which for many years has used 120-150 penetration material, has recently changed to the 100-120 grade, while the New England states specify 85-100 material. Also, New York has built nearly all of her roads with a 3-inch top course, and with asphalt pours of 2 gallons or less for both applications. While the New York roads are most of them high-class, their excellence has been secured at a higher maintenance cost than is necessary for the type. For instance, while Massachusetts seldom oils an asphalt macadam sooner than seven or eight years after construction, with an average of about twelve years before such a treatment, New York State averages such a treatment every third or fourth year. If one looks at the map of Massachusetts, one will see leading north from Boston a long, perfectly straight route toward Portsmouth, N. H., and the Maine coast. This is the famous Newburyport Pike, 25 miles long and the most favored route for reaching the beaches and short resorts, as well as the most direct trucking route from Boston into Portsmouth and the Maine cities. It is largely asphalt macadam, some of it fourteen years old, none of which has ever been treated with one drop of oil. The same condition obtains on the heavily traveled east-and-west route between Boston and Worcester. In view of the results secured in Massachusetts, it is evident that the construction differences which make fewer surface treatments possible without adding to the cost are most desirable. New York State has been spending from 1 million to 1½ million dollars yearly on this oiling work, showing that the possibe savings mount to a considerable figure.



NEW MACADAM SURFACE TYPICAL IN MASSACHUSETTS PRACTICE

This "toothy" condition, an excellent driving surface in any weather, will continue from four to six years, after which time the asphalt binder will have worked to the surface under traffic, giving a more smoothly filled sheet-like appearance. This surface is waterproof from the beginning, and, although the individual stones project somewhat, they are nevertheless bound so tightly that no raveling occurs

NEW MACADAM SURFACE TYPICAL IN RHODE ISLAND

This surface is less "toothy" than new Massachusetts work and is due to the larger keystones and the heavier pour of seal coat, which averages ¾ to 1 gallon per square yard

I dwell at some length on this surface treatment phase as it is a misunderstanding which has ruined many a good road, has caused the waste of millions of dollars, and has been held up as a nuisance bugaboo by inexperienced highway officials and others against a much wider adoption of the macadam types.

Foundations

Not only do foundations for asphalt penetra-

ASPHALT MACADAM HIGHWAY BUILT IN 1912 ACROSS THE FAMOUS MONTEZUMA MARSH IN WAYNE COUNTY, N. Y.

This marsh is of several thousand acres extent. The roadway is floated on a mattress of timber and brush, and despite the appreciable flexures of this support, the pavement is still in excellent condition

tion macadams play an important part in the success of the pavement, but their development is of interest. Early foundations were light, in keeping with the general construction of the time, usually 3 or 4 inches of coarse crushed rock, with the occasional strengthening of additional gravel. The use of gravel without a crushed rock cover was tried but was generally found unsuccessful unless the gravel was of exceptional quality. With increasing weight of traffic, heavier foundations were seen to be necessary, and an attempt was made to use a base of large stone, of, say, 8-inch greatest dimension, to give a greater depth of base, but at a cost lower than possible with crusher product. The earlier examples were built without especial attention to the grade of filler for this course and with no intermediate course between it and the penetration surface course. The result was that, with soft filler frequently used, the top-course stone would soon be pushed down into the larger voids of the foundation stone, leaving an uneven surface. This roughness was two or three years making itself apparent, so that a considerable mileage of road had been completed before the specification was improved. The requiring of screened gravel or crushed stone filler, together with an intermediate crushed stone course, has corrected this difficulty. The depth of this large-stone base course is now generally 8 inches minimum. There are locations where the available material is hard roundheads, many of a size ready for crushing but too large for base course, where I believe a less depth, say 6 inches of crushed rock, would make a better foundation at less cost than the sledged stone with proper filler and leveling course.

There has been a limited yardage of asphalt macadam placed over portland cement concrete foundation in this section: Some of this was so designed originally, while in some cases the surfacing was placed as soon as it was realized that the concrete was unfit to serve longer as a surface. These foundations were usually 4, 5, or 6 inches in depth, 1:3:6 or 1:2½:5 mix, and sometimes of gravel aggregate. The results have been satisfactory. I recall two instances in central New York which have 4-inch gravel concrete bases, pit-run aggregate, about 1:2½:5 proportions, with 2½-inch asphalt macadam surfacings. These were laid in 1912 on the main streets of villages on through routes and are now in most excellent condition, with practically no repairs. Certainly, here the asphalt surfacing has extended the life of this concrete many times its natural life if left uncovered.

Composite Foundations

Chautauqua County, New York, is spending several million dollars on her county system of highways in addition to the state mileage in the county. Suitable local stone is not to be had. Their gravel is not sufficiently clean for hot mixed surface. However, her road building is in the hands of people of long experience in the construction and maintenance of high-class pavements, who realize "there are many ways of skinning a cat." They use a 12-inch compacted depth of local gravel, placed in two courses for a foundation. Over this is placed a 4-inch compacted depth of crushed blast-furnace slag, this being the cheapest material of the sort to be had. This is followed by a 3-

inch depth of penetration asphalt macadam of imported limestone. The whole cost of these 16-foot-wide roads, 19 inches deep, with a large portion of imported materials, and through terrain requiring about 7,000 cubic yards of grading per mile, averages between $20,000 and $25,000 per mile.

Asphalt Carpets for Old Concrete Roads

These same people have gone a long way toward finding a suitable means of carpeting portland cement concrete pavements that have begun to fail through disintegration or shattering.

In Chautauqua County and the territory immediately adjacent, the state has more than a hundred miles of portland cement concrete pavements now requiring resurfacing if they are to be salvaged as foundations. In an effort to hold them together until such time as funds are available for placing hot-mixed tops, thin asphaltic surfacing has been placed. After much experimentation excellent results are being secured through the use of a surface treatment of asphalt cut-back of about 35 per cent distillate and 100 penetration residue. Two applications of ¼-gallon each are given, each followed by the rolling in of all the ¾-inch stone the cut-back will carry. This treatment has been tried out over many miles of portland cement concrete and is giving lasting results.

Aggregate for Wearing Course

Throughout the greater part of New England it is considered essential that high-quality, hard, tough stone only should be used in the wearing course of asphalt macadam. In many sections it is necessary to import such stone, as the local stone does not qualify. While I would hesitate to criticise any leaning toward higher-class construction, I feel that many times proper manipulation of the stone and selection of the binder will give first-class results with stone of a softer nature. Such stone should not be rolled more than enough to lock it together and smooth it out before the first application of asphalt. But it will withstand, and it should have, a thorough backrolling after all the materials are in place. Also, the sizes should be larger, and the manipulation should be such that the stone is not left exposed to wear and impact, but traffic should be carried on the asphalt and stone dust matrix. With this method, good results will usually be obtained automatically through the use of a soft stone if a reasonable quantity of asphalt is poured. Also, a softer grade of asphalt will work better to pick up any broken fragments of rock.

I have seen instances of such work in which there were used comparatively soft, thinly laminated sandstone or loosely bound granites that are affording excellent riding surfaces after ten years' service. Apparently they are good for many years yet. One such example is immediately adjacent to high-grade crushed trap surfacing with identical traffic, soil, and base conditions and presents just as excellent a surface and is, I believe, quite as satisfactory for the traffic imposed as the more expensive road of imported materials. I cite these opinions not with a desire to advocate lower standards of construction, but once more to emphasize the adaptability of many kinds of local

A 3-INCH ASPHALT MACADAM SURFACE PLACED IN 1913 OVER AN OLD WATERBOUND BASE PLACED IN 1902 IN WASHINGTON COUNTY, N. Y.

The most recent state traffic count shows over 3,000 vehicles in a 12-hour period

materials to some type of pavement with fair assurance of success. The savings that are possible frequently run into totals so large as positively to demand their acceptance.

In the Catskill and Adirondack mountain sections remote from railroads, as well as in some of the southern sections of New York State and in many sections of New Hampshire, Vermont, and Maine, savings of more than $10,000 per mile may frequently be effected through the adaptation of the type to the materials at hand, and yet give a perfectly satisfactory pavement. For the asphalt macadam type usually the only material requiring importation is the asphalt, and that only to the extent of about 120 tons per mile. While the difference in this item is slight for the mixed asphaltic types, it is tremendous with any other type, running, as in the case of portland cement concrete, from 900 tons where only cement and steel are imported, to 2,600 tons per mile if sand also must be brought in, and to 5,300 tons per mile if it is necessary to import the stone. Not only does the cost of freight and haulage run into an extravagant item without adding in any way to the value of the materials, but it unnecessarily obligates the employment of a considerable number of men and hauling units that might well be used for other work, A' still greater reason for avoiding this hauling is the wear and tear unnecessarily inflicted upon the roads intervening between the construction work and the delivery point at railroad or dock.

A VIEW ON THE POST ROAD ROUTE FROM BOSTON THROUGH PROVIDENCE TO NEW HAVEN AND NEW YORK CITY

This pavement, built in 1915, is still as good as new at an average yearly maintenance cost of 1½ cents per square yard

Construction and Maintenance Costs

Construction costs vary with the locality, material, width, thickness, etc., as well as between original construction and resurfacing. In New York in 1925 the average cost per mile has been $32,000 for heavy reconstruction work. In Massachusetts $45,000 per mile is given as the average; Rhode Island reports an average of $31,375 per mile for the past nine years' work; while Connecticut reports $23,200 for 1924. Recent maintenance costs are available only from Massachusetts, which gives $.03¼ per square yard, and from Rhode Island, which shows $.022 per square yard, or $232 per mile of 18-foot road. The latest published figures from the large mileage in New York State are for the year 1922 and they show a maintenance cost of $455 per mile for asphalt macadam. For the reason we have already mentioned, that is, excessive oiling, this figure is unnecessarily high. Also, it must be remembered that these roads are old roads, averaging ten years of service, and were built before we realized what traffic was in store for them. There is no good reason why New York maintenance costs should be higher than those of Massachusetts or Rhode Island.

Maintenance costs of all kinds of pavements are the subject of much discussion nowadays,

but few analyses give proper recognition to depreciation. This item, together with interest charges, forms the bulk of the highway expense, with maintenance charges playing a comparatively small part. This is especially true in comparing the usual hard-surface types now being considered for our better roads.

Fifteen to twenty thousand dollars per mile difference in construction cost is a usual figure between some of the types. On the basis of a $15,000 difference in first cost, with a 15-year serviceable life, the difference in interest and amortization charges between the two kinds runs up to $1,350 per year. So a difference in maintenance cost of one to two hundred dollars per year, or even an outside three hundred, does not change the result very much.

Value of Gravel

It would not be proper to conclude without some special mention of the possibilities of gravel in high-class construction, especially in New Hampshire, where such excellent gravel abounds. There are two outstanding methods of utilizing this material in asphaltic work. One for carrying the lighter traffic is the asphaltic oil surfacing that is giving such excellent results on thousands of miles of road under traffic as heavy as on 90 per cent of the New Hampshire mileage. This surfacing requires a minimum of renewal for its kind, say, every three to five years, and makes a wonderfully effective and inexpensive method of salvaging some of the more cheaply constructed waterbound and gravel roads where the raw surface will no longer suffice. The other gravel type is for any traffic that will come; it is the hot mixed graded asphaltic concrete. In sections where reasonably clean gravel is found, this pavement may be placed for considerably less cost than any of the other good types, will handle any traffic with a minimum of repair, and has the usual asphalt advantages of durability, waterproofness, ability to absorb shock, resilience, and fine appearance. There are many hundred miles of this in New England territory, and New Hampshire is getting her share.

Another wonderful possibility in this type is its adaptability for "black base." "Black base" is gaining in favor by leaps and bounds as the results of its use are becoming more widely known. It makes a most satisfactory foundation with the least volume of expensive construction of any type yet devised. It has all the asphalt advantages just mentioned, it never cracks, it may be used in any depth down to feather edge, and reduces detour delays to a minimum. Some of the highway departments specify it in standard designs of less thickness than any other type. And these departments have had the longest experience with it, dating back as far as thirty-five years. Such continued confidence can be based only upon thorough satisfaction.

ACKNOWLEDGMENT.—From a paper read at the annual meeting of the New Hampshire Good Roads Association.

Suggestions for Systematic Street-Naming

A PLEA for greater interest in the choice of street names is made by Francis J. Mulvihill in an article on "Street Names for Subdivisions" which appeared in a recent issue of *The Florida Engineer and Contractor*.

"Where do all the names come from? What are the methods used for furnishing designations? The system in New York, Chicago, and Washington is numerical and alphabetical, at the same time hopelessly prosaic. Their merits are well known, being extremely easy to persons without brains. In large industrial plants employees, particularly laborers, are designated by a number instead of their name. Admittedly it is convenient, but imagine the same treatment given to the world's poets and artists, its fair women and our children.

"Anything that is characteristic, individual, of local color," the writer continues, "is useful within reasonable bounds. Good names for use in Florida, and appropriate names, can be secured from poem, legend and tale; from Old English, Norse, Celtic, and Welsh origins, and Spanish and Italian, also; from feeling out the significant features of road, path and plot. Rolling hills and lovely valleys, placid lakes and rushing rivers, low-lying plains and forest-covered uplands and hammocks; sandy beaches and river bluffs, mangrove swamps and palmetto jungles, pine-clad ridges and hardwood groves; open fields, trees and shrubs, birds and other wild life will all yield a wealth of suggestion."

Many examples of appropriate and systematic methods of street naming that have already been used in Florida developments are referred to in the article as offering possible suggestions for future naming schemes. The Granada subdivision uses Spanish names throughout its seventy-five acres; the Locarno development, which was formerly the site of the Merrill-Stevens shipyard, preserves the memory of that use of the property, having an Olympic Way and a Cherokee Place—both named for ships. The Lake Shore Estates uses names from England. Jupiter Townsite has appropriately turned to mythology for many of its street names; hence Neptune Drive, Uranus Court, etc. University Park fittingly names the streets of one of its sections for well-known colleges and universities, and in another section one finds such names as Milton Way, Tennyson Avenue, and Byron Way.

"In naming our streets," the writer concludes, "we can write and preserve local history and tradition and honor, and perpetuate the names of men and women of distinction, record the community's ideals, its administration and progress."

A Small City Whose Growth Is Aided and Controlled by a Plan

By B. L. Lambuth

ABOUT two years ago, THE AMERICAN CITY carried a story telling of preliminary plans for a model city—Longview, Wash.—which was to be built fifty miles inland from the Pacific Ocean at the point where the Cowlitz River joins the Columbia on its journey to the sea. This city was destined to be exceptional from its very beginning because it was completely planned before a single building operation took place.

In a way, the growth of Longview has been like the painting of a beautiful picture. Nature prepared the canvas—a vast plain lying at the confluence of the two rivers and rimmed round with fir-clad hills. The patron at whose command the painting was made, was R. A. Long, founder and chairman of the board of The Long-Bell Lumber Company. The painters were the city planners and the men who are in charge of the development of the city. The brushes of men, money, and materials are at work; the canvas begins to gleam with color. The plan begins to take shape. Industries are operating on the water-fronts where once wild fowl cried. Blocks of handsome business buildings and homes have arisen where orchards bloomed and cattle grazed. The population has passed the 10,000 mark. The two banks of the city have deposits of over $1,490,000; the local post office has advanced to the highest grade in the second class; the *Longview Daily News* has a circulation of over 5,000. Building permits for 1925, exclusive of major industrial construction, totaled $2,375,825.

Longview, it will be remembered, is primarily an industrial city, growing as it did out of the decision of The Long-Bell Lumber Company to extend its timber holdings from the Southern pine forests to the Douglas fir stand in the Pacific Northwest. In the words of Mr. Long: "A large body of land was necessarily acquired for our operations. The construction of a great many homes and buildings was necessary to provide facilities for our own people. As we began to work out our plans, we found that the location we had selected would lend itself to greater development and provide facilities larger than were required for our own use. Therefore, we concluded it was our duty—and such was our desire—to provide for a city which would be a desirable place in which many thousands of persons might live and do business. We have planned here for a city that within the next five years should have a population of 25,000, and within the next ten years, of 50,000 or more."

City Planners Called into Conference

When it was definitely decided that a city would be built at the juncture of the Columbia and Cowlitz Rivers, expert city planners were called into conference. As the previous article stated, they planned for wide streets so arranged that traffic congestion was obviated. At the center of these converging streets, they laid out a six-acre civic center park around which only buildings suitable for such a site could be erected. They laid out other park areas and prepared for street planting, uninterrupted by pole lines. Districts were set aside for residences, retail businesses, commercial enterprises, industries, apartments, and suburban tracts, and a zoning system prevented them from encroaching upon each other. When the city was complete upon paper, and not before, actual construction was begun.

It was August, 1922, when the first street grading was done, and it was the following October before work was started on any of the permanent buildings of the city. The first lot was sold in February, 1923, and in July of that year the city was dedicated with appropriate ceremonies. The visitors were taken over the city site by trains operating on supply tracks. Much of the work up to this time had been preparatory—laying sewers and water-mains, grading for streets, laying pavement and sidewalks, erecting telephone and electric lines.

One of the real achievements, however, was that of building Hotel Monticello, a six-story fire-proof structure of 200 rooms, each with bath. In the face of trying conditions, the hotel was completed, furnished, and ready for occupancy ten months after it was begun, as the first permanent building in the city and the first building in the civic center. Vying

Views of Broadway, Longview, Wash., before and after the development which two and one-half years have made in this thoroughfare and the civic center

Hare and Hare, City Planners *Geo. E. Kessler, City Planning Consultant*

with the hotel for the honor of being the first permanent building, was a department store which opened a little later. Other masonry buildings were under construction in the business district; a masonry community house, the first unit of the school, and two apartment houses were in various stages of completion in other sections of the city. In St. Helens Addition, 250 cottages of the four- and five-room type were completed for the workmen and their families, and St. Helens Inn, a group of five dormitory buildings capable of housing 500 men, provided for the unmarried workmen.

A daily newspaper was being published. A fleet of busses provided transportation in the city and connected with the ferries operating across the Columbia River. Ocean-going freighters unloaded cargoes of building materials across a temporary dock, and concrete brick and pipe plants furnished other materials to be used in constructing the new city.

Later, in July, 1923, construction was started on the first unit of The Long-Bell Lumber Company's plants. The following year saw a continuance in the growth of the city. In February, 1924, the city was incorporated in the third class and established its departments of city government.

The development of Longview has been in the hands of The Longview Company since the beginning of operations, inasmuch as The Long-Bell Lumber Company desired to confine its activities to the manufacture and sale of lumber.

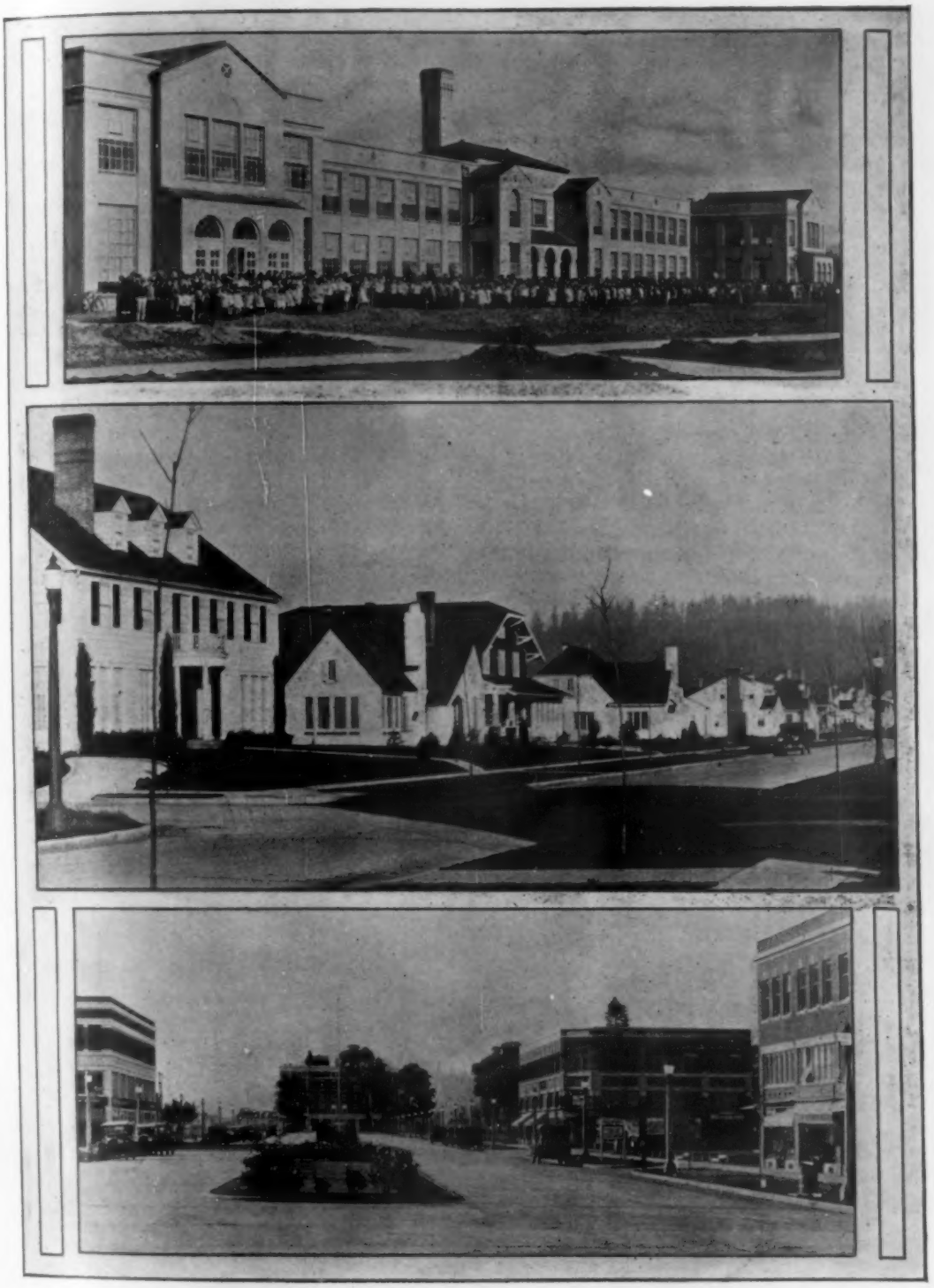
Zoning and Other Restrictions

In considering the problems of zoning and other restrictions it has been the policy to impose such minimum safeguards as were necessary to protect investment in real property and to guard against general conflagration. At all times, a high standard of construction and design is encouraged. For instance, in certain sections of the business district, the restrictions require the erection of masonry business buildings at least two stories high and of such construction that they do not constitute fire hazards. In residential districts, certain restrictions are made establishing minimum costs of homes in the various districts, and building lines for residences and outbuildings. The restrictions are very complete, but not drastic in their requirements. They follow the best practice, but are designed to protect the investment of the small home owner even more than that of the large.

Fair competition is encouraged in all lines of activity. Surveys were made of other cities to determine the number of establishments in each given line of activity which a city will maintain at each stage of its growth, in order that over-development of any line of business may be avoided. There are no artificial monopolies or concessions for any line of business in Longview. The desire of the founders was to create and maintain an advancing real estate market and a rapid and substantial rate of city growth on the basis of fair and open competition prevailing in the average, prosperous American city. A pay-roll analysis made as of November, 1925, shows how this program has worked out: There were 5,594 persons gainfully employed in Longview on that date. Industrial enterprises employed 2,392; building occupations employed 925; public utilities, 584; retail business, 314; hotels and clubs, 289; and the professions, 186.

At present the company is developing several residential districts, an apartment district, suburban acreage, a retail business district, a manufacturing district, and a section devoted to light industrial and wholesale enterprises. The zoning system limits each of these developments to its own boundaries and, in some cases, divides the districts for internal development. Up to the present time, lots have been sold with certain improvements, such as paved, graded, or graveled streets, curbs, sidewalks, water-main, street lighting, beautified parking strips, or sewer. These improvements have been either included in the purchase price of the property or incorporated in a local improvement district and the cost of installation apportioned among the property in the district. The local improvement district system was used in 1925 to add something like $1,500,000 of paving improvements, giving the city a total of 27 miles of streets with paving ranging in width from 20 to 60 feet, and 68 miles of concrete sidewalks. In all districts, lots are served by alleys in which pole lines are placed.

Surrounding the inner city of Longview is Lake Sacajawea, a crescent-shaped body of water one and one-half miles long. Adjacent to this lake are most of the residential districts of the city. Between it and the civic center is the highest type of residential property now under development in Longview, where the minimum cost of a residence must be $4,000, but where the average cost is about $6,000. South of the lake lies another residential district where most of the homes are of the four- and five-room cottage type. Beyond this district is a third where building restrictions are at a minimum. A fourth district west of the lake will be composed of the



Top.—The Longview Public School building and part of the student body, which numbers 1,650. Middle.—A street of homes in one of the seven residential districts of Long view. Adjacent to this district are the apartment district, Lake Sacajawea Park, and a nine-hole golf course. Botto m.—Looking west on Broadway, Longview, showing the street-planting system which is being followed on all the principal thoroughfares of the new city. In the background is Hotel Monticello, the first permanent building

preceding three types of development. Nearest the lake will be the more expensive homes. The next tier will be of the cottage type, and in the outlying border will be the smaller, more inexpensive homes.

Two more residential sections are really included in suburban development. Property in these districts is sold as acreage and not as lots. One of the districts is hillside property and while it provides for some gardening and fruit raising, the restrictions provide that it shall be used primarily for residential purposes and that permanent dwellings must cost at least $1,000. The other suburban district, Columbia Valley Gardens, lies in the valley west of Longview and provides for more extensive gardening, dairying, poultry raising, or fruit raising.

The final residential district is adjacent to the railroad and commercial districts and will be both commercial and residential in its development, although the ultimate usage of this property will probably be commercial. In the seven residential districts more than 1,650 permanent homes have been constructed, and about three-fourths of them are privately owned.

The apartment district is centrally located in respect to the residential districts, the civic center, and the business district. Six apartment houses have already been erected in this district, and eight duplex apartments are supplementing their capacity.

The main retail district is so located that it can be conveniently reached from the residential districts, the civic center, and the industrial districts. There were 53 masonry business buildings completed in the retail district on January 1, 1926, ranging from one- to four-story buildings.

The central manufacturing district adjoins the retail district and is designed for commercial, wholesale, and light industrial enterprises which may need spur service but which do not necessarily require water-front facilities. In this district are distributing plants for the Associated Oil Company and General Petroleum products; two retail lumber yards, an ice plant, two creameries, a machine shop, a millworking plant, several plumbing establishments, various warehouses, and similar establishments.

In the Cowlitz River water-front district are the plants of the Concrete Pipe Company and the Pacific Straw Paper and Board plants. The major industrial development, however, has been on the Columbia water-front. Here is the 2,000-acre site of The Long-Bell Lumber Company, adjoining which the Standard Oil Company has erected a wholesale and marine distributing plant. Further west on the Columbia River water-front, The Weyerhaeuser Timber Company has purchased a 700-acre site with two miles of frontage, where three plants have been planned.

Another important development on the Columbia water-front is the construction of $200,000 public port facilities at the foot of Oregon Way, one of the main thoroughfares of Longview. Spur tracks will serve the docks and connect them with the three transcontinental carriers.

Community Enterprises and Activities

Though the foregoing paragraphs may give some idea of the physical development of Longview, they do not adequately reflect all the factors which make it such an interesting city. A city is no greater than the people who live in it. The Longview citizenry has been loyal and enthusiastic in the face of unusual pioneering conditions. Longview was designed to be a beautiful city, and home owners have played their parts by beautifying their lawns and gardens and by building attractive and charming homes.

Supplementing these endeavors of the citizens is the program which the founder of Longview announced in December, 1924, when he stated that he expected to spend at least one million dollars of his personal fortune during the next five to seven years in the development of the civic center and in the beautification of the city. During 1925, Mr. Long built a public library as the second building in the civic center; beautified one of the five sections of Lake Sacajawea and other park areas; planted the esplanade on Broadway and lined it with flower-beds, and had tree surgeons work on the patriarchal maples in Jefferson Square. The 1926 program includes the landscaping of the grounds around all the civic buildings; the planting of other sections of Lake Sacajawea; the beautification of Oregon Way; and the setting-out of thousands of street trees.

When the first unit of the Longview Memorial Hospital was opened to patients on November 9, 1925, it was done as a result of community enterprise. The hospital was financed in a stock subscription campaign in Longview and neighboring communities. Rooms and wards in the hospital were furnished by various local organizations. This first unit is four stories high, has an 80-bed

A. N. Torbitt, Architect

THE COMMUNITY Y—CENTER OF RECREATIONAL ACTIVITY IN LONGVIEW

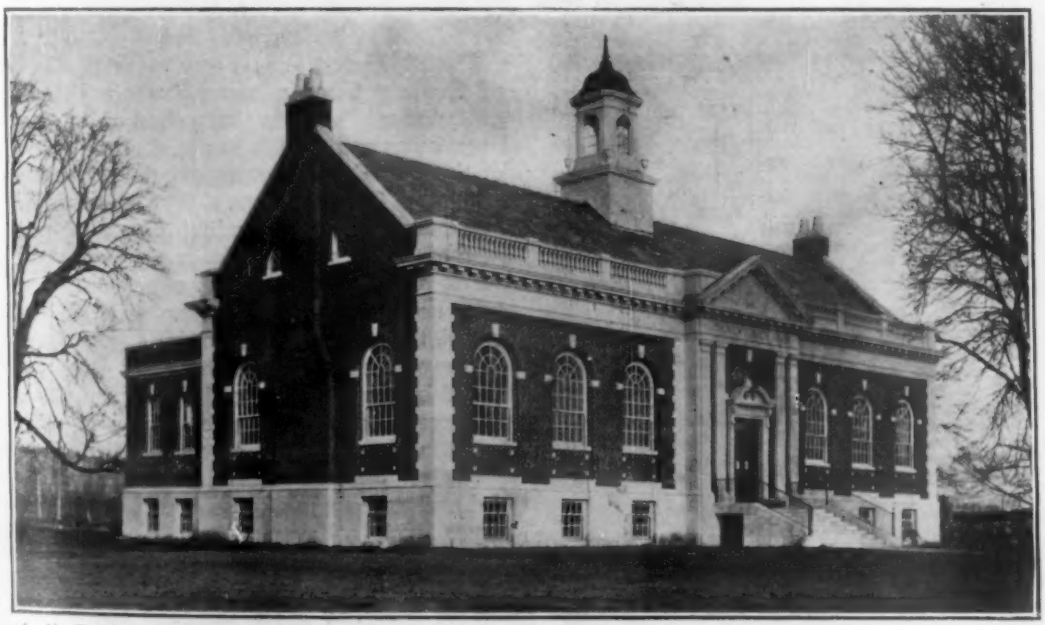
The building offers gymnasium, swimming pool, auditorium, bowling-alley, billiard- and committee-room facilities. It is used by men, women, and children

capacity, and employs a staff of 42. The community church, on which construction was started in December, 1925, is being financed by popular subscription.

A third indication of Longview's interest in its community problems was the provision of a modern tourist camp in a fine old oak grove. Showers, laundry and kitchen facilities, radio installation, a store, and a community house, made the park so attractive that more than 10,000 people visited it during the summer season.

A rapidly increasing enrollment in the Longview public schools necessitated the building of a second unit in 1925. At the beginning of the 1926 term, the student body numbered 1,650 and the faculty 49. The younger generation has its athletic teams, its Boy and Girl Scout organizations, and its classes at the Community Y. M. C. A., just as the older people have their baseball, basketball, and soccer teams, their civic, social, and fraternal organizations, and their classes at the Community Y.

Two theaters, one costing $250,000, vie with the Community Y gymnasium, swimming pool, bowling-alleys, and billiard-room, and with the golf course and the tennis courts.



A. N. Torbitt, Architect; Hoit, Price and Barnes, Consulting Architects

LONGVIEW PUBLIC LIBRARY, THE GIFT OF R. A. LONG TO THE CITY WHICH HE FOUNDED

Cost of Garbage, Ash and Refuse Collection

Material Prepared by Municipal Reference Library, Chicago, on Cost of Motor Truck and Team Hire in Various Cities

Baltimore, Md.

Horace E. Flack, Executive, Department of Legislative Reference, Baltimore, Md., reports that the Commissioner of Street Cleaning of Baltimore, Md., hires very little private equipment for the collection and removal of garbage and ashes. About ten motor trucks are hired for this purpose and are paid at the rate of $2 per hour. These trucks carry 6 cubic yards of garbage or ashes and about 7 cubic yards of refuse or light waste.

Boston, Mass.

Edward F. Murphy, Division Engineer, Sewer and Sanitary Division, Public Works Department, states that in Boston a contract is let at the beginning of the fiscal year, January 1, for the furnishing of double and single teams and auto trucks throughout the city. The capacity of the trucks is 10 cubic yards, of single teams 2½ cubic yards, and of double teams 4½ cubic yards. The following schedule shows the prices and number of teams and auto trucks employed in 1926.

Dist.	Location	Double Teams Number of Days	Single Teams Number of Days	Number of Days Auto Loads
No. 1	South Boston and Dorchester North	900	300	200
No. 2	East Boston and Breed's Island	100	20	10
No. 3	Charlestown	20	20	25
No. 5	West Roxbury	1,000	25	250
No. 6-9	Dorchester and Ashmont	400	20	80
No. 7	Roxbury South and Jamaica Plain	1,000	50	700
No. 8	South End and Roxbury North	1,100	700	300
No. 10	North and West End and Back Bay	700	2,500	100
No 11.	Hyde Park	50	10	50

Contractor	Double Teams	Single Teams	Autos
Edw. J. Byrne	$6.75	$3.90	$23.00
E. J. McHugh & Son	8.00	6.00	23.00
M. Boyle & Co., Inc.	5.50	3.00	23.00
Charles Loonie	7.50	4.00	23.00
M. McGinnis & Co.	4.98	3.00	23.00
M. H. Loonie Const. Co.	7.75	6.00	23.00
B. E. Grant Co.	7.10	6.10	23.00
T. H. Corrigan & Sons	8.00	6.00	23.00

Buffalo, N. Y.

William C. Tenjost, Street Commissioner, reports that Buffalo does not hire any motor trucks for the collection of ashes and garbage, the city owning its equipment. In winter, however, outside teams and trucks are hired for snow removal. Buffalo pays $2.50 per hour for 5-ton, 7-yard dump-trucks, and $1 per hour for 3-yard dump-wagons.

Cincinnati, Ohio

Fred Maag, Superintendent, Street Cleaning Department, states that in Cincinnati his department is engaged only in the removal of ashes and rubbish, together with street and sewer cleaning. The collection of garbage is let out by separate contract and is handled by the Union Reduction Company of Cincinnati. For the removal of ashes and rubbish no private trucks or teams are hired by the city, the work being handled within the department by its own equipment.

Cleveland, Ohio

Mary H. Clark, Municipal Reference Librarian in Cleveland, reports that the city owns all the trucks used for garbage collection and all trucks used for ash and rubbish collection. Teams, however, are hired at $1 an hour for the collection of the latter, totaling $115,000 in hire last year. These wagons have a 2½-yard body.

Indianapolis, Ind.

Russell T. MacFall, Vice-President, Board of Sanitary Commissioners, Sanitary District of Indianapolis, states that collection of garbage, ashes and rubbish is made by the Board of Sanitary Commissioners and not by private collectors. The city owns a fleet of reversible side-dumping trailers, hauling 4 tons of garbage each. These are loaded in the streets and alleys, are horse-drawn, and attended by one man, usually the owner of the team. When loaded, the trailers are assembled at a common rendezvous, made up into trains of four and hauled by tractor-truck to the reduction plant, an average haul of five miles. Ashes are collected in the same way, except that the driver and helper load the trailers, which are assembled and made up into trains and hauled to the dumps, with an average haul of about two miles. The average cost of collecting and hauling garbage for 1925 was $3.015 a ton. The cost of collecting ashes for 1925 was $0.665 per yard, and of collecting market-house refuse

$0.442 per yard. Last year a little over 25,000 tons of garbage was collected and disposed of, with a net profit of $21,000 to the reduction plant.

Jersey City, N. J.

Edward B. See, Chief Clerk, Department of Streets and Public Improvements, states that the collection of ashes and garbage and kitchen refuse is done under contract and the city does not know the price paid by the contractor for the use of private motor trucks employed in collection. The city's contract is for a lump sum per year. When the city does hire motor trucks, it pays at the rate of $25 per day for them. Jersey City has no incinerator, the ashes, garbage, and kitchen refuse being collected and taken to the lowlands and dumped. The contractor is required to cover them with a layer of earth, complying with all the rules and regulations of the Health Department.

Los Angeles, Calif.

C. L. Nash, Cost Accountant, Engineering Department, Los Angeles, reports that Los Angeles does not hire teams or trucks for the collection of garbage. These are owned by the city, but teams employed on other work cost $8.25 per day and 2½-ton trucks $276.50 per month. The drivers of teams and trucks are allowed all legal holidays, two weeks' vacation each year, and one half-day off each Saturday, so that they are paid for 312 days each year and work 260 days. Garbage collectors are paid $4.75 per day for day service and $5.00 per day for night service. The garbage is collected by the city and delivered to a central loading station, where it is loaded aboard cars and shipped to a hog-feeding ranch about 70 miles from the city. The rubbish is dumped in low territory, usually on private property.

Milwaukee, Wis.

Frederick N. MacMillin, Municipal Reference Librarian, Milwaukee, Wis., reports that the motor equipment used by the city of Milwaukee for the collection of garbage, ashes, and rubbish is owned by the city and it is not necessary to hire private vehicles for the purpose. The major portable equipment of the city of Milwaukee, with certain exceptions, is under the control of the recently created Bureau of Municipal Equipment of the Department of Public Works, and the various divisions of the departments of the city government are billed by this bureau for vehicles used by them. In this way, for example, the trucks and trailers used for hauling garbage are also used by other divisions for other purposes. The year 1925 was the second year of operation of the Bureau of Municipal Equipment, and the following schedule of rates was enforced during the year:

SCHEDULE OF RATES ON USE OF EQUIPMENT

Type of Equipment	Rate, Hourly	Mileage
Autos	$ .10	
Ford roadster		$ .08
Ford touring		.09
Other passenger cars, except one below		.10
Big touring and sedan		.12
Light trucks	.10	
Roadster type		.11
Touring type		.11
1-ton		.12
1½ and 2-ton		.14
Heavy trucks		None
3½-ton	.50	
5-ton	.80	
Other equipment		None
Trailers, sanitation	.06¼	
Trailers, stone	.09	
Trailers, other	.12½	
Road rollers	1.70	
Concrete mixers	1.50	
Air-compressors	1.50	
Tractors, Caterpillar	1.20	
Tractors, light	.80	
Sweepers, motor-driven	.90	
Eductors	.90	
Flushers, motor-driven	1.00	
Sprinklers, horse-drawn Flushers, horse-drawn Snow loaders Pumps, hoists, etc.		Operative and repair costs plus overhead
Derrick	.25	

All rates are exclusive of operator.
(In the case of all light equipment up to and including 2-ton trucks it has been found that a combined mileage and hourly rate is most suitable to prevent the allowing of equipment to stand idle without reporting it available.)

Minneapolis, Minn.

W. J. Walsh, Assistant Engineer, Engineer's Department, reports that all of the garbage collection in Minneapolis is done by city-owned trucks, no teams being hired. There are three distributing points in the city to which the garbage is hauled after being collected from residences. From these central stations, it is hauled to the garbage disposal plant by trucks and trailers and burned. The rate of pay for teams when any must be hired, is $9 per 8 hours. Some 3½-ton trucks have been rented for $20 per 8 hours.

New York City

R. Gossage, Assistant Librarian of the Municipal Reference Library of New York, states that Manhattan, Brooklyn, and Bronx have not hired either teams or trucks in the last eight years except for six weeks during the last year following the heavy snow-storm. The rate paid varied from $22.50 to $25 and $30 according to the distance required, the average load being 8 yards. Four to six loads per day were required.

Carl Gerks, Superintendent, Bureau of Street Cleaning, Borough of Queens, states that the Board of Estimate and Apportionment allows the following rates for hire: 3½- to 5-ton

motor trucks carrying 6 yards of garbage, ashes or sweepings and 16 yards of refuse per day of 8 hours, $25; motor trucks over 2 and less than 3½ tons, carrying not less than 4 cubic yards of ashes, garbage and sweepings and not less than 12 cubic yards of refuse per day of 8 hours, $17.50; horse and cart with driver and vehicle per day of 8 hours, $6; team and truck with driver and vehicle per day of 8 hours, $8. The vehicle carries 3 yards of ashes, garbage or sweepings and 9 to 10 yards of refuse; horse and cart, 2 cubic yards of ashes, garbage or sweepings and 9 to 10 yards of refuse; horse and cart, 2 cubic yards of ashes, garbage or sweepings, and 7 cubic yards of refuse. Mr. Gerks states that these are not prevailing rates, but are those which are fixed by the Board of Estimate and Apportionment. The fixation of this rate is positive and no higher rate can be paid except by special resolution of the Board. In the Borough of Queens there are two methods of final disposition—by incineration and by inland dumps. At the present time the Borough is operating eight Decarie incinerators, a total tonnage of 890 per day. Funds have been provided for two additional plants of 150 tons each. Two additional sites are under consideration, money for which will be allotted in 1927. On the inland dumps, ashes and mixed material are deposited. The better grade of ashes is used on dirt streets and to cover the poorer mixture of mixed material in order to make it as sanitary as possible.

Philadelphia, Pa.

A. M. Soby, Chief, Bureau of Street Cleaning, Department of Public Works, reports that 5-ton motor trucks may be hired in Philadelphia at the rate of $2.50 per hour, and two-horse drop-bottom wagons may be hired for $1 per hour. The price includes the driver.

Rochester, N. Y.

Harold W. Baker, Commissioner of Public Works, states that the prevailing rate for 5-ton dump-trucks hired by the Department of Public Works is $2.50 per hour, and for teams with dump-wagon at $7.50 per day.

St. Louis, Mo.

According to J. M. Slater, Commissioner, Department of Streets and Sewers, the city of St. Louis owns all the equipment employed in the collection of household garbage. The city has in service at the present time approximately 100 two-horse garbage collection wagons, the number of wagons employed in the work fluctuating according to the volume of garbage collected. During the winter, when this type of work is at a minimum, between 75 and 90 wagons are all that are necessary, and during the peak period, July, August and September, as many as 140 wagons are used. The compensation for the driver is $115 per month, and the keep for the animals is approximately $1 per head per day. Garbage is collected three times a week in any given part of the city and loaded on barges at the river. These barges are the property of a private contractor who has the contract with the city for the disposal, for which he receives 74 cents per ton. The garbage is then taken down the river approximately 50 miles and deposited on an island, where it is fed to hogs. At the present time motor trucks have not been put in service in this work, although there are 4 tractors and 24 trailers which will be put into service as soon as a proper unloading platform is erected. During the last year 68,246 tons of garbage was collected, 63,976 tons was delivered to the barges and 4,270 tons was received by private hog raisers who have such farms in various parts of the country within a few miles of the city. The cost of collection for garbage for the year ending April 1, 1926, was $4.33 per ton, together with disposal at 74 cents per ton, giving a total of $5.07 per ton for collection and disposal. There were also collected during that fiscal year 1,354 large dead animals, such as horses and cows, and 16,872 small animals, such as dogs, cats, etc. The cost of collecting these amounted to $5,994. Motor trucks are employed in the collection of dead animals, and the animals are delivered to a private rendering company for disposal. Ashes and other household rubbish are not collected by the city. This must be disposed of by the individual citizen at his own expense.

Seattle, Wash.

W. D. Barkuff, Superintendent, Department of Streets and Sewers, states that the street cleaning work in Seattle is all done with trucks owned by the Department. Whenever it is necessary to hire equipment, the uniform rate is $3.50 per hour for 5-ton trucks, which includes fuel, oil and driver. The Department operates on an 8-hour basis. Garbage collection is under the Department of Health and Sanitation. Until recently the garbage has been collected in horse-drawn dump-carts. Now the Department has been motorized, using hired equipment.

Washington, D. C.

Morris Hacker, Supervisor of City Refuse, reports that in this service no motor trucks or teams are hired for the collection of garbage, ashes and refuse, as the district owns all teams and trucks used in the work.

SANTA ROSA, CALIF., WITH ITS OLD TWIN-LIGHT STANDARDS

Santa Rosa Knows Improved Street Lighting Is Worth the Price

Business Streets Under New System Contrast Favorably with the Past

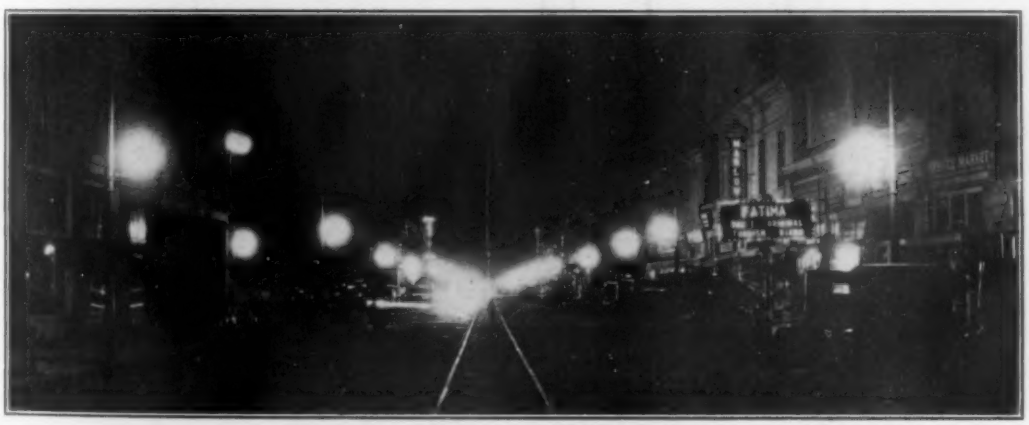
IN the fall of 1925 the City Council of Santa Rosa, Calif., entered into an agreement with the Great Western Power Company whereby the power company would replace the two-arm bracket lights with single standard Novalux brackets on the street-car company's poles at no cost to the city for installation. During the winter and early spring the company installed 68 400-watt lamps, replacing 136 100-watt lamps.

The new lights were turned on with fitting ceremonies in front of the Court House; the Mayor, City Council, Chamber of Commerce, and representatives of the power company taking part in the program.

The only cost to the city for this better illumination is the cost of the additional current which is used. The power cost for the old lights was $2.50 per month each. The cost for the new lights is $5.31 each per month, making the increased cost to the city only $21 per month.

The Great Western Power Company cooperated willingly and paid the cost of the installation. This is the first section to be installed based on a plan which has been worked out for extending this type of illumination throughout the entire business section of the city.

We are indebted to Mark Lee, Secretary, Santa Rosa Chamber of Commerce, for the information on which this item is based.



THE EFFECT OF MODERN STREET LIGHTING IN SANTA ROSA

Maintenance of Street-Lighting Systems

THE problem of the adequate maintenance of street-lighting units is receiving much more attention than it has in the past. Progressive operating companies are establishing systematic maintenance schedules for the cleaning of glassware. The units are thoroughly washed with soap and water or some other cleansing compound from four to twelve times a year, in some cases even twice a month, depending on the need of the particular location. Lamps which have lived long

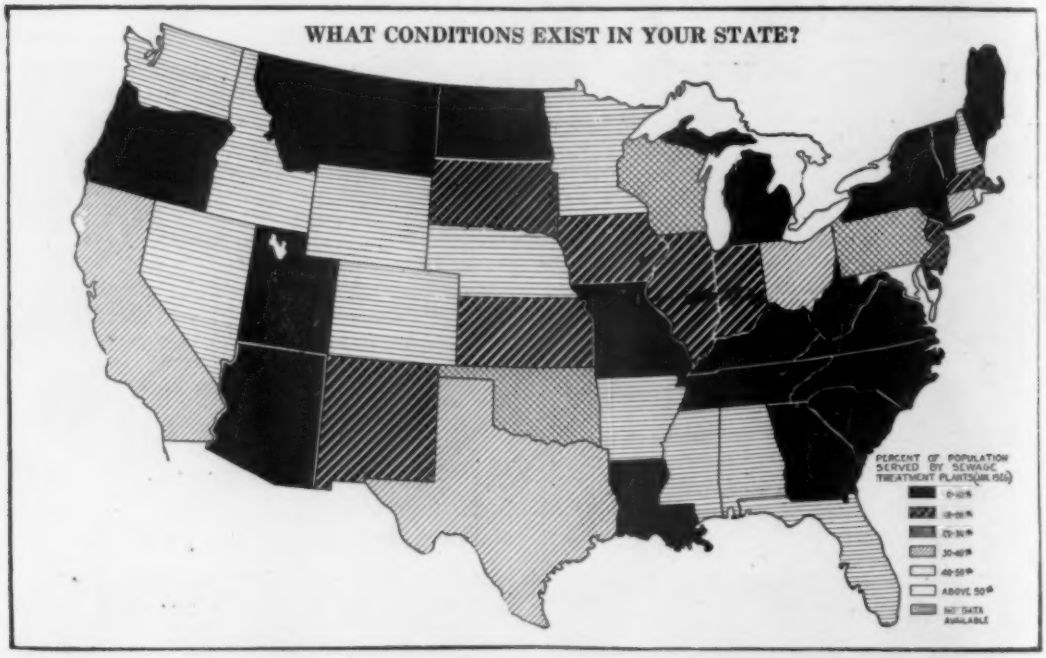
beyond their rated life, and in which the filament may have sagged or the bulk blackened, are removed from the circuit.

In order to reduce outages and to have all the lamps operating at an apparent normal candlepower, with the consequent improved appearance of the system, some operators are keeping records on each lamp, and after the lamps have burned, say, 1,600 hours, they are removed from the circuit. Other operators patrol the system with the purpose of removing all lamps which are apparently low in candlepower. Still others divide the territory into districts, and as soon as the outage rate becomes high in any district all lamps are replaced. The old lamps are then inspected and those which have blackened bulbs, badly pitted filaments, or other indications that the lamps have lived practically their normal life, are broken.

Modern fixture design is tending toward dust-tight and bug-proof equipment, but, even with the best designed equipment, a systematic maintenance schedule must be followed rigidly.

Shall Waterways Be Sewers Forever?

There Should Be an Active Campaign Against Stream Pollution, Which Is Greater Now Than Before the World War


WHAT CONDITIONS EXIST IN YOUR STATE?
PERCENT OF POPULATION SERVED BY SEWAGE TREATMENT PLANTS(MUNICIPAL)
ABOVE 50%
NO DATA AVAILABLE

MAP AND SURVEY PREPARED THROUGH THE COOPERATION OF SANITARY ENGINEERS AND HEALTH DEPARTMENTS, SHOWING PER CENT OF POPULATION SERVED BY SEWAGE TREATMENT PLANTS IN VARIOUS STATES

Of states furnishing no data, some do not have a pollution problem, because of a thinly scattered population, and others have not yet organized their forces to combat the menace. Data from the 36 states reporting probably hold good for the entire country. Of 41,000,000 people in 22 states reporting on sewer systems, 22,000,000 people are served by municipal sewer systems. Of 91,000,000 people in 36 states reporting on sewage treatment plants, only 15,000,000 people are served by municipal sewage treatment plants

ONE of the most pressing problems confronting every community today is the matter of sewage disposal. Eighty per cent of our urban population is guilty of turning our waterways into open sewers. Because of the absence of concerted effort to make proper disposition of community and trade wastes, sewage has been dumped into the nearest streams and forgotten.

Stream pollution has been a menace for years, although in most instances the contamination has been so gradual as to escape the attention of the average citizen. Sanitary conditions must now be built into the community. Provision for the present alone is not sufficient. Sanitation, like all other community problems, must be planned with the increased growth and a demand for better living conditions constantly kept in mind.

Today the movement to eliminate stream pollution by eradication at the source through the building of sewage treatment plants is gaining recognition in every part of the country. So far the movement is only in the initial stages. What progress has been made is due to the efforts of an awakened press, some public-

spirited organizations, state boards of health and sanitary science. Cumulative comments from many states show that the seriousness of the problem has aroused thinking persons to diagnose conditions and recommend remedies. The late Professor George Chandler Whipple, of the Harvard Engineering School, said, "There is now a greater indifference to stream pollution, a greater laxity in enforcing laws, than was the case before the World War. Certain things have been demonstrated by experience. The pollution of a stream may steadily increase without serious offense and without attracting much attention until suddenly a crisis is reached, the dissolved oxygen disappears from the water, and the river is wrecked."

Colonel Robert I. Randolph, speaking before the Lake Michigan Sanitation Congress, March 13, 1925, declared, "There are 68 cities in the United States with a population of 100,000 or more. Of these, only 17 make any attempt to treat their sewage, and of these only 7 treat as much as 80 per cent of the sewage. The community which depends upon water treatment alone for the purity of its domestic supply has but one line of defense against the most potent enemy of public health. As pollution of the source of supply increases, it will not be sufficient to depend solely upon filtration and disinfection for complete protection, and the sooner prevention of the pollution of supply is undertaken, the better it will be for the public health in every community. This question of the prevention of the pollution of public water-supplies is rapidly assuming national importance. The U. S. Public Health Service is making comprehensive and valuable studies of sources of infection and methods of prevention. It is not a valid defense for any community to point to the failure of other communities to correct the evil."

An interesting pamphlet which should be in the hands of every municipal official bears the title, "Drinking Water, Sewage and Health," and may be secured without cost from Major Henry W. Lee, President, Lake Michigan Sanitation Congress, 9119 Commercial Avenue, Chicago, Ill.

Sewage Purification—Real and Delusive

By George A. Johnson

Consulting Engineer, New York City

WHAT definite objective inspires the treatment of community sewage? Is it fear of legal complications attendant upon the continued fouling of public waters? Is sewage treated solely in order that these public waters may be kept sweet, that is, inoffensive to the senses of sight and smell? Is the purification of community sewage ever essayed in an honest and determined endeavor to render it practically innocuous to the public health? In the last century has the scientific mind exhausted all of the possibilities, and plumbed to their depths all of the potential resources whereby the water-carried filth of communities may be rendered inoffensive, not only as an elementary conception, but also reasonably harmless and impotent in a disease-producing sense? Is it the cost of such an undoubtedly desirable attainment that has swept tangentially the decisions of the engineer and sanitarian into easier and less expensive courses, leaving for future generations the inevitably necessary task of consistently rendering sewage substantially pure before its unavoidable discharge into public waters?

For nearly a hundred years the world has been endeavoring to purify public water-supplies so that they might be utilized for primary purposes without fear of disease, discomfort, and death. Only within the past twenty-five years, however, have the widespread salutary effects of these endeavors been coherently recognized. Here and there, through past generations, the experience of typhoid- and cholera-ridden cities, when adopting filtration of their water-supplies, produced absolute proof that impelled other communities to follow their example. For the best part of a century, however, the sanitary as well as the lay mind, as a general proposition, could not be brought to believe in water purification. What is the feeling now? In the past twenty-five years the American filtered water population has grown from 2,000,000 to 25,000,000, and the typhoid fever death-rate in the registration cities has dropped from 36 to 7 per hundred thousand population living. Is the question just put really necessary in the face of these statistics?

The humorist who asserted that "the first hundred years are the hardest" struck perilously near the truth when the saying is applied to the growth of the water filtration idea. The aphorism applies with even greater force in the case of sewage purification. There is no doubt that such efforts as have been made in

the past to purify sewage—or ninety-nine per cent, plus, of such efforts—were undertaken at the instance of earnest state board of health officials and similarly clean-thinking private citizens, in an honest endeavor to keep our public waters in fairly decent condition, and to diminish as much as was seemingly feasible the discharge into them of increasing torrents of crude and noxious filth, to the growing discomfort and distinct menace to health of all communities unfortunate enough, from a sanitary standpoint, to be located upon, or adjacent to, such poison-infected waters.

Cost Considerations Have Been Primary

Faced by the problem of what should be done to purify its sewage, the community dealing with it first considered the various types of treatment, and learned, as well as it might from the very conflicting data at hand, about what it might expect in the way of results, and nuisance, from each of them when applied in sundry engineering fashions to the local situation. Cost considerations came in for primary discussion; but finally a program was decided upon, the money to build the plant raised, and the works constructed. In one hundred cases out of one hundred the works designed and built had as their objectives, first, the removal of suspended matters from the raw sewage; second, a lowering of its putrescibility with its attendant offensiveness to the senses of sight and smell; and, third, a reduction in its bacterial content. The first objective sought was imperative, the second almost equally so, but the third was always incidental. Engineers, and maybe sanitarians, may cavil at the author on the bluntness of this statement. It is nevertheless entirely substantiable. Never has the definite attempt been made on a practical scale deliberately to render the sewage of an American community innocuous to health as discharged into public waters later used for bathing or water-supply.

It has been said that a poor workman finds fault with his tools. The American engineer may say that he is doing the best he can with the devices at his disposal for treating sewage. That is not at all the point most interesting to the lay public. Watt's first condensing steam engine would not be tolerated today. The "Clermont," so proudly steaming up the Hudson in 1807, would now make a sorry showing beside the "Leviathan." Have we really advanced at all in the decade in sewage treatment practices? Must we despair of acquiring anything better in 1926 than that which we tolerated in 1916?

The Value of Preventing Pollution

During his wanderings in the wildernesses of Arabia Petraea, as described in the Pentateuch, the teacher Moses prepared a sanitary code numerous parts of which the present generation might well observe to advantage. He was particularly emphatic in his expressions respecting the maintenance of the purity of the water used for drinking by the Israelitic horde. Assuredly he did not direct the casting into it of excrement and its subsequent purification before consumption. He seemed to be rather keen on rendering all excrement and offal innocuous by burial or incineration. We of today are perhaps wiser than this leader of a million or more people. We have learned how to purify polluted water so that it may safely be drunk, and because of that, and because we do not care or do not know how, or will not seek light, or because we are unreasonably obsessed by the anticipated high cost of complete purification of sewage, we continue in varying degree to foul our public waters with human excrement and uncountable millions of bacteria, and to trust our water purification plants to return these waters to their pristine innocuousness before we drink them.

What is preventive medicine? Does not every one admit that "an ounce of prevention is worth a pound of cure"? Is not the physician a more welcome caller in the household than the surgeon? Has not the medical profession labored for many years, and against staggering odds and the sternest kind of opposition, to devise prophylactic barriers against every understood disease? Should not the sanitary engineer burn a little midnight oil and take counsel with himself with respect to whether or not he is doing his obvious share in the promotion of the doctrine and practice of disease prevention? Can any right-thinking man honestly and complacently resign himself to the conviction that there is no way in which community sewage can feasibly be rendered practically innocuous before it is discharged into another's water-supply? That all that can be done is to accomplish with the processes now accepted as standard a fair degree of purification of the sewage, a result attractive on the average, excellent at times, but deplorably and inevitably bad for some of the time?

Present-Day Purification "Tools"

What has the sanitary engineer available for "tools" whereby he may purify sewage, and, if they fail to yield the perfect result, that he may not be culpable in consequence of there not being at his hand those facilities which

would produce results more closely approaching the ideal? Screens for removing coarse suspended matter; tanks for removing fine suspended matter and at times some of the bacteria; stone beds (biological machines) whereby, when they are working properly, the crude organic matters in the sewage are mineralized and rendered non-putrescible, to a degree; or in place of the stone beds, tanks wherein air is blown upward through the sewage for protracted periods and a similar but perhaps better result obtained; or sand filters which in warm weather, and when not overloaded, and when properly cared for, yield a splendid effluent. Of the widely recognized processes, that is all, except the employment of germicides to kill bacteria, which are seldom used.

"Average" Results Are Good

All of these devices in the most favorable combinations, designed for proper capacities and intelligently and conscientiously operated, will, much of the time, under favorable climatic and other conditions, yield a liquid effluent of agreeable quality, quite free from putrescible proclivities, and fairly free of bacterial life. Even on the average, the result will be good; but with the advent of warm weather the settling (and Imhoff) tanks may develop highly unmanageable symptoms, and produce effluents often worse than the crude sewage itself; and in the winter time biological activities slow up, and in consequence the aerating process developed in recent years is liable to err; the stone filters will become overloaded through abnormal storage of material the sluggish bacteria cannot digest; and the sand filters freeze up and go out of service altogether.

In fine, the prime weakness of all the so-called standard processes of sewage treatment today is a constitutional weakness. Without exception, every one of them depends for its success, primarily and essentially, upon the highly capricious and uncontrollable activities of bacterial life. As a perfectly natural consequence, they all fail to give consistently reliable results. Their average performance may be viewed as satisfactory, at least as fulfilling the anticipations of the designer; but sometime during the year, for days at a time, they will fail.

Now in streams where the natural flow is high, these temporary failures are not of such vital importance as where the stream flow is low and dilution of the inferior sewage effluent is insufficiently high to prevent the establishment at such times of highly offensive and dangerous conditions. Under such circumstances, the highest practically attainable degree of purification of the crude sewage is demanded. Where the stream flow is always more than sufficient to dilute the partly purified sewage so that offensive conditions in the stream will not be set up, then fine screening, or screening and sedimentation, with disinfection, perhaps, will partially solve the problem.

Disposal of Sludge

The sewage problem presents another important angle, namely, how to secure a sludge which in itself will be inoffensive initially and so remain. Not one of these so-called standard processes of sewage treatment consistently or often yields such a sludge. The semi-solid deposits in the settling or clarifying tanks, and issuing from the stone beds or scraped from the surface of sand filters, are putrescible in varying degree, teem with bacterial life, and are difficult and costly to dispose of. The sludge problem is a real problem.

Following the qualified successes of the so-called standard processes of sewage treatment, it would seem that what is needed now is a process whose efficiency will not be based upon biological action. It should be mechanical throughout, and depend for its success solely upon efficient mechanical, chemical and electrical processes, and final sedimentation.

Variations of such methods of treatment have been experimented with in Europe and America. It has survived the experiments made on it in its earlier and incomplete stages of development. Its performances in plants of variable make-up have indicated with a degree of positiveness that it bids fair to revolutionize the art of sewage purification, and that it deserves earnest and impartial investigation.

In studies made during the past twenty years, which have been more searching in the past five years, it has been found possible consistently to produce with this new method a sewage effluent of high purity, a low putrescibility, and one practically free of bacterial life. Moreover, the sludge produced is initially stable, is practically free of bacterial life, and of itself remains stable indefinitely, and there are no sewage odors anywhere about the works, nor within them except in the screening room where the raw sewage enters.

Costs

As to costs, it is estimated that the total cost of treatment by such a mechanical process, including interest on the investment, sinking fund, power, chemicals, supervision, labor, and miscellaneous supplies and repairs, will approxi-

mate $15 to $30 per million gallons of sewage treated, varying with the size of the plant. Taking the sewage flow at 30 million gallons per day for a population of 200,000, this cost would amount to $1.64 per capita per year, or less than two cents per day for an average family of four people.

The thought persists—is this a charge of appalling magnitude? If such highly desirable results can be secured, is it too much to pay for the advancement of this highly important and hitherto neglected branch of preventive medicine? If any of the so-called standard forms of sewage treatment used throughout the world should cost one-half or one-twentieth this sum, but still inevitably and unpreventably fail for a sizable period in every year, and where the natural flow of the stream into which the sewage effluent is discharged is too low at times to prevent the establishment in the stream of putrefactive conditions, or where the close proximity of water-works intakes to the sewer outfall dictates a consistently high degree of sewage purification, should cost factors enter into the choice if the always needed, well-nigh ideal result is consistently obtainable from a process at a cost of less than two cents per family per day?

It actually would seem that the lay public do not comprehend that ofttimes they have paid for something which was "sold" to them on the misunderstood and improper basis of average, and not actual, day-to-day performance. If one's automobile runs sweetly for a hundred days, and then without warning fails the next day following when one is on an important mission, that machine will ever after be under suspicion. A sewage treatment process whose intended purpose is to conserve the public health and comfort must perform efficiently and well all of the time; not well today and badly tomorrow. This is just as true of sewage works as it is of water purification works.

Los Angeles Builds 10-Inch Concrete Pavement on Cahuenga Pass Road

By R. H. Rook

Chief Inspector, Board of Public Works, Los Angeles, Calif.

LIKE an arm flung out to protect Los Angeles, lies the range of the Santa Monica Mountains, guarding the city on the northwest, yet shutting off an area of wealth and importance—the San Fernando Valley. For years this range of hills has presented an obstacle to road building. With the rapid growth of the valley beyond this range, together with the increased travel in that direction, the main road connection through Cahuenga Pass has become one of the heaviest-traveled roads in southern California and also one of the most congested.

The Cahuenga Pass Road has the additional responsibility of carrying the bulk of the traffic which originates or is destined for points along the main Coast Highway and the Ridge Route —the principal north and south arteries for

SUBGRADE PREPARED FOR THE NEW THICKENED-EDGE PAVEMENT

motor vehicles in southern California. In order to relieve the congestion and provide for the future, the city of Los Angeles planned to equip the Pass road with a surface wide enough and heavy enough to meet all demands.

Plans and specifications were prepared calling for a surface of cement concrete. At first an 8-inch slab was considered, but this was later increased to 10 inches because of the unusually heavy truck traffic which uses the route. In width the Cahuenga Pass Road will ultimately be 72 feet between curbs, and plans provide for a 5-foot sidewalk along the east side. However, the first unit to be built consisted of two 20-foot strips, side by side, to make a 40-foot roadway. The remainder of 32 feet is now under construction. The design of slab for the Cahuenga Pass Road calls for the thickened edge type somewhat similar to that being used by many state highway departments. The central portion of each 20-foot strip is 10 inches in thickness, the edges 12 inches, with the thickened part flared from a point 5 feet from each edge. This makes an average thickness for the pavement of 10½ inches, which is the most substantial surface ever laid on a California highway. The pavement is not reinforced except for an area of approximately 500 square feet which is over a new fill. Concrete was proportioned 1:2:3½, and specifications throughout were required to meet the high standards for cement concrete pavement required by the Board of Public Works.

By following a new line, it was possible to give the new road several advantages. Traffic was allowed to move uninterrupted over the old macadam road while the new surface was being built. Several turns sharper than is safe for a heavily traveled highway were eliminated. The new road has a maximum grade of 5.6 per cent, whereas the old road climbed in places as high as 12 per cent.

CONSTRUCTION WORK ON THE CAHUENGA PASS ROAD

For the greater part of its 6,000-foot length, the new line required side-hill cut and fill. The excavation was 37 feet deep at one point. In all, over 200,000 cubic yards of cut and approximately 50,000 cubic yards of fill were made.

So urgent was the need for the new road through Cahuenga Pass, that the time allowed for constructing it was cut to 35 days. In order to complete the paving within the limit, the Southern Pacific Construction Company, contractors, put on two mixers and worked each two 8-hour shifts daily. This plan proved efficient and the pavement was in place in a total of 32 days. It was opened to traffic in connection with a monster celebration staged by the Hollywood Chamber of Commerce on January 23, 1926. While the highway lies wholly within the city of Los Angeles, it is all-important to a large part of Los Angeles County. The San Fernando Valley is dotted with residence communities and farther out with truck farms. A large portion of the sand and gravel used in Los Angeles building comes from the same valley. The traffic from these sources as well as all through traffic for the northwest part of Los Angeles and Hollywood makes up a total traffic as varied as any could pos-

TRAFFIC ON THE OLD ROAD WHILE THE NEW PAVEMENT WAS BEING PLACED

FORTY FEET OF CONCRETE PAVEMENT AVERAGING 10½ INCHES IN THICKNESS ON THE CAHUENGA PASS

sibly be. For this the most substantial pavement that could be built was provided, with ample provision for widening when the rapidly increasing traffic warrants this construction.

Citizens Present Road Contractor with Cup

AS an expression of their appreciation of the rapid completion of the pavement on Main Street, the citizens of El Monte, Calif., presented the contractors, Hall & Johnson Company, Los Angeles, Calif., with a silver cup. Considering the many complaints that are frequently heaped upon contractors, an expression of this kind is most unusual.

Besides being right in the business section of El Monte, Main Street is a part of the Valley Boulevard, which carries thousands of southern California tourists. Time was a most important element of the contract, and the contractors made the best possible use of it.

Construction of the pavement, which consisted of 150,670 square feet of 7-inch Vibrolithic concrete pavement built to a width of 60 feet, was started October 26 and completed November 21, 1925. Owing to the width of the street and the necessity for having part of it open to traffic at all times, the pavement was built in three 20-foot sections, the sections being separated by a ⅜-inch expansion joint.

An additional contract containing approximately the same number of square feet and for the same type of pavement has since been awarded to the Hall & Johnson Company by the city of El Monte, giving added evidence of the satisfaction with the first job. El Monte is in Los Angeles County, and is a suburb of Los Angeles. County aid was extended on the first contract.

CUP PRESENTED TO THE HALL AND JOHNSON COMPANY BY THE CITIZENS OF EL MONTE IN APPRECIATION OF THE PAVING OF THEIR MAIN STREET IN RECORD TIME

Requirements in Small Water-Works for Proper Fire Protection

By Harold F. Hunter
Engineer, Chicago Board of Underwriters

THE problems arising in a small town that is contemplating installing a water-works system are in general financial puzzles rather than engineering problems, and it usually is a case of trying to invest the money so as to secure the maximum fire protection and service from the limited funds available with which to construct the water-works.

It is, I believe, the general practice to pay for the installation of the distribution system by special assessment against the abutting property, according to the benefits derived. So this becomes merely a matter of convincing the general public of the desirability of having a public water system and putting the issue to a test vote.

The supply works, however, must be provided for by other means, generally by bond issue or by "water certificate" methods, and it is this feature which frequently limits the small town in the amount of investment possible.

Division of Costs

Unfortunately, the greater proportion of costs for a new water-works in a small town is for fire protection. Consequently, this makes the proposition harder to sell to the "die-hards" who "don't want fire insurance because they never had a fire." Mr. Hunter has handled the various needs and financial problems in a clear and helpful way in this article.

The "measuring stick" used to classify the excellence of the fire protection is the "Standard Schedule for Grading Cities and Towns of the United States with Reference to Their Fire Defenses and Physical Conditions." The schedule was compiled by engineers of the National Board of Fire Underwriters, of 85 John Street, New York City, formulated from a study of conditions in more than 500 cities in the United States. This schedule has been applied by engineers of the National Board of Fire Underwriters to practically all cities in the United States of over 20,000 population, and nearly all the rating bureaus in this country have adopted this schedule and have applied it to the towns of less than 20,000 population in their own territories.

An Assumed Example

For the purpose of illustrating the requirements for a certain small city, let us assume a case and carry through the calculation as to its needs, taking for example a city of 5,000 population, where the buildings in the mercantile district are two stories or less in height. Consulting a table given in the Grading Schedule, we find that a population of 4,000 calls for a required fire flow available of 2,000 gallons a minute, and a population of 6,000 calls for a fire flow of 2,500 gallons a minute. The population which we have assumed is midway between these two figures, but in view of the structural conditions (no building exceeding two stories in height) we should feel justified in using the lower figure, or 2,000 gallons a minute required fire flow.

The average daily consumption we will assume to be in the neighborhood of 100 gallons per capita, or a total of 500,000 gallons, and the maximum consumption for any one day we will assume to be about 750,000 gallons. The total maximum daily consumption, plus the fire flow required, will thus be 750,000 plus 2,880,000, of 3,630,000 gallons. This is therefore the yield which the source of supply must be capable of delivering in conjunction with the elevated and/or suction storage available, in order to have no deficiency under the item of adequacy.

We will assume that two wells are in service, each pumped direct to the distribution system and each capable of yielding 1,000,000 gallons a day. Thus we will have a total available of 2,000,000 gallons a day, with a total required of 3,630,000 gallons, or a deficiency of 1,630,000 gallons a day, which is equivalent to about an 1,100-g.p.m. rate. To offset this deficiency, let us assume that we have installed a 150,000-gallon elevated tank. The requirement the supply works must meet is that 10 hours' fire flow must be obtainable during the maximum consumption period. Our yield of wells is greater than the maximum consumption, so all our storage may be considered as helping to supply the 10 hours' fire flow. The rate which

would just empty our 150,000-gallon tank in 10 hours would be $\frac{150{,}000}{10 \times 60} = 250$ gallons a minute.

Our deficiency was 1,100 gallons a minute, and subtracting the 250 g.p.m. obtained from the elevated tank leaves 850 g.p.m. To provide for this it would be possible to install a suction storage reservoir of 510,000 gallons capacity and a 500- and a 350-g.p.m. booster pump to draft from this reservoir and pump to the distribution system when heavy flow for fire is required. Figuring this as in the case of the elevated tank at such a discharge rate to just empty it in 10 hours, $\frac{510{,}000}{10 \times 60} = 850$ g.p.m., which is just the right amount needed to supply the deficiency. A special provision is made for towns of less than 2,500 population, in that, under the item of adequacy, the flow required is for a 5-hour instead of a 10-hour period.

This example shows very pointedly the difference between conditions in a small town and in a large city with respect to the ratio of the fire flow required to the maximum daily consumption. In the case we have assumed, the fire flow required is nearly four times larger than the maximum daily consumption; while in a large city like Chicago the maximum daily consumption is over fifty times larger than the fire flow required, so that in the latter case the yield of source of supply, capacity of pumps and supply mains, filters, etc., must of necessity be designed to take care of the maximum consumption and will thus be easily able to care for fire-flow demands.

But with the small town water-works it is a question of economic expenditure as to how far to go in meeting the requirements for standard protection. In the case we have assumed, as far as properly caring for the maximum domestic consumption goes, it would be amply supplied by one well yielding 1,000,000 gallons a day and the 150,000-gallon elevated tank, or even with a smaller tank, but this equipment would be about 66 per cent deficient according to the requirements for adequate fire supply.

The usual water-supply works that would be found in an average town of this character would probably consist of one 1,000,000-gallon well and a 100,000-gallon elevated tank. In this case recommendations could be submitted to the town for removing the deficiency in source of supply without drilling an additional well, and this would probably be the better way to handle the situation. This would require the construction of a suction storage reservoir and the installation of booster pumps drafting from the reservoir and pumping into the distribution system. The deficiency to be removed is 3,630,000—(1,000,000 + 100,000 × 2.4) = 2,390,000 gallons a day rate, or about 1,700 gallons a minute. The capacity of a reservoir to just empty on being pumped for 10 hours at a 1,700-g.p.m. rate would be 1,700 × 60 × 10, or 1,020,000 gallons, the capacity required. For booster pumps, one 1,000- and one 700-g.p.m. electric centrifugal booster pump would fulfill the requirements.

Pumping Capacity

After the adequacy has been provided for, the pumping capacity is the next consideration. The requirements of the Grading Schedule are that to have no deficiency, pumping capacity must be such that with the two largest pumps out of service it is possible to maintain maximum consumption and fire flow at required pressure. Where storage is provided, its ability to maintain supply shall be considered with one pump and two pumps out of service. To have no deficiency pumps, plus storage must be able to provide fire flow for ten hours during a period of five days' maximum consumption.

In the case we have assumed, with one 1,000,000-gallon well, one 100,000-gallon elevated tank, and the 1,020,000-gallon suction storage reservoir with one 1,000- and one 700-g.p.m. booster pump, it would be necessary to install an additional 1,000-g.p.m. booster pump in order to have no deficiency with one pump out of service. With this additional pump installed, there would still be a deficiency with the two largest pumps out of service, but it would not be so serious, as the amount of charge applied for a certain per cent of deficiency becomes less for the item with two pumps out than for one pump out, going on the assumption that the probability of two pumps being out of service simultaneously is more remote. The case of electric or steam power interruptions is covered in a separate item.

Water Pressure

The question of pressure to be carried on the water system is one of great importance in the degree of fire protection afforded, as the ability to deliver the fire flow or a portion thereof at pressures permitting direct streams from hydrants receives a special credit in the grading of the water system. These pressures are assumed at 75 pounds or more in high-value districts, depending on the static pressure avail-

able, the heights of buildings, and the amount of engine capacity available in the fire department; 60 pounds where not more than ten buildings exceed three stories and in closely built residential districts, and 50 pounds where buildings do not exceed two stories and in thinly built residential sections. Two-thirds the fire flow available at these pressures in excess of the fire-engine pumping capacity available may be credited under "Fire Department, Required Engine Capacity," as affecting in whole or in part any deficiency in required engine capacity.

In other items of water-supply, the fire flow is considered on the basis of flow available at 20 pounds residual pressure, unless the credit described above for direct hydrant stream supply has been given under the fire department item, "Pumping Capacity"; if this credit has been given, then it will be necessary to consider the supply works with respect to its ability to deliver water at direct hydrant stream pressure.

In the representative town we have selected it will be seen that the required residual pressure for direct hydrant streams will be 50 pounds. Thus the design of the pumps and height of the elevated tank should be decided upon with this in view. It would be strongly urged that the tank be elevated so as to give a pressure of 70 pounds at the base, and that pumps be installed capable of discharging the rated capacity at this pressure.

With the arrangement above, it is assumed that there is a single 12-inch supply main from the pump-station and elevated tank a distance of 2,000 feet to a point in the mercantile district where the flow test will be made, the elevation being the same at both points. This gives an allowable loss in pressure of from 70 to 50, or 20 pounds or 46 feet head in 2,000 feet length of pipe, which would be equivalent to an allowable loss of 23 feet per 1,000. From hydraulic tables the flow obtainable through a 12-inch pipe with this loss in pressure would be about 2,500 gallons a minute. However, in nine cases out of ten the water-works will be in or adjoining the principal business district, which will give more favorable results on account of shorter length of discharge main and consequently less friction loss for a given flow of water.

Water-Mains

It is important that mains of good size be installed in and around all portions of the business district, as in connection with making a survey of the water-works system for grading the fire protection of the town two flow tests will be made in this district, one at the strongest point and one at the weakest point (if there is any difference), and if the flow obtained at 20 pounds residual pressure at the weakest place is less than the required quantity, a charge is applied.

The reliability of supply mains as affecting adequacy must be considered. Under this head would be considered all pipe lines or conduits on which supply to the distribution system is dependent. Deficiency for each individual possible break must be considered and the charge applied for the break, giving the maximum deficiency. An additional charge is applied for length of pipe in which this worst break could occur. Under the assumption of the most serious break, the deficiency may be considered as offset if the remaining mains from the source of supply and storage can provide fire flow for ten hours during a period of five days' maximum consumption. A specified deduction from the charge is allowed under this item for smaller cities requiring less than 5,000-g.p.m. fire flow. The relative infrequency of fires is assumed as offsetting in part the probability of a serious fire occurring at times when the main is out of service.

Single Supply Mains

In most of the smaller towns it will be found that there is a single discharge main from supply works to distribution system, in which a single break would cause total interruption of supply, or 100 per cent deficiency. But in the case of the small town it is practically an economic impossibility to install duplicate discharge mains simply in order to overcome this deficiency, as it is very doubtful if any insurance saving which they could effect would be in any way comparable to the total cost of the additional discharge mains, because the total insurance involved will not be great enough in value.

Power Supply for Pumps

The power supply for operating pumps is a feature of great importance affecting the reliability of the system. In our territory (Cook County, Ill.) nearly all are now electric-driven, there being only a few left that depend on their own steam plants, and several of these are now planning to replace steam units with electrically driven apparatus. The electric service is unusually well adapted for this service in this locality. As a good network of transmission lines gridiron the territory and the average towns have about three separate ways of receiving current, shutdown from this cause

is very improbable. One of our cities has thirteen different transmission lines from which current can be supplied to the pumps in the water-works. Overhead electric lines introduce a degree of unreliability which may in part be offset by storage. Transformers, if required, should be in duplicate banks. In a steam plant, the steam piping and boiler feed should be so arranged that a failure of any line, or renewal of a valve, boiler feed pump or injector would not prevent maintaining, in connection with storage, fire flow for ten hours during a period of two days' maximum consumption. A deduction also applies on this item where the fire flow required is less than 5,000 gallons a minute.

Fire-proof Pumping-Stations

Pumping-stations and other portions of the plant should not contain combustible materials in their construction, otherwise an automatic sprinkler equipment should be installed. Outside hydrants and hose, inside standpipes and small hose and chemical extinguishers should be provided. A public fire-station within three-quarters of a mile is considered equivalent to about one-half protection required. The several sections, particularly those containing high-potential generating or transforming apparatus, should be separated by parapeted fire-walls, and all openings protected by single standard fire-doors or wired glass in metal frames. The heating should be steam or hot water, with the boiler located in a properly cut-off room. All exposed windows in the station should be properly protected, at least by wired glass windows in metal frames.

Distribution System

The arterial system should be of sufficient size, considering the length and character of the district served, to deliver the fire flow necessary for the district and be frequently spaced and looped. Practical dependence of large sections on single arteries constitutes a deficiency.

For minor distributors 6-inch is the minimum size considered satisfactory for hydrant supply in residential districts, to be closely gridironed with 6-inch cross-connecting mains at intervals not exceeding 600 feet. In new construction 8-inch should be used where dead ends and poor gridironing are apt to exist for some time, and 6-inch only where blocks are 600 feet or less in length. In high-value districts 8-inch pipe is the minimum size permitted, with cross-connecting mains every 600 feet; 12-inch or larger mains must be used on the principal streets and for all long lines not cross-connected at frequent intervals. All dead ends should be eliminated by cross-connections with 6-inch pipe.

Valves and Hydrants

Gate-valves should be installed and located so that no single case of accident, breakage, or repair to the pipe system, exclusive of arteries, will necessitate shutting from service a length of pipe greater than 500 feet in high-value districts or greater than 800 feet in other sections, and will not result in shutting down an artery.

Hydrants should be installed to give an average area served in proportion to the fire flow. In the case of the town we have assumed, where the fire flow required was 2,000 gallons a minute, if no engines were in service in the fire department, the required area per hydrant would be 85,000 square feet. If engines were in service, the required area would be 110,000 square feet per hydrant. In estimating the area served in the high-value district, the actual area of this district would be considered, including one-half the area of bounding streets, and a boundary hydrant would be considered as half a hydrant in figuring the total number of hydrants in the district.

Hydrants should be able to deliver 600 gallons per minute with a loss of not more than 2½ pounds in the hydrant and a total loss of not more than 5 pounds between street main and outlet; they should have not fewer than two 2½-inch outlets, and also a large suction connection where engine service is necessary. They should be of such design that when the hydrant barrel is broken off, the hydrant will remain closed. Street connection should not be less than 6 inches in diameter.

Fire Department Facilities

The foregoing is a brief synopsis of the various items which are considered in the classifying of a water-works system as to the excellence of the fire protection which it affords. However, in the analysis of the fire protection, the existing fire department facilities must also be taken into account, as it can readily be seen that a first-class water system would not be available to the full extent of its value for fire extinguishment if the fire department was undermanned and not equipped with proper facilities for handling the water available. This is cared for in the Grading Schedule by applying a charge for divergence between the grades of the two departments when the divergence reaches a certain amount; hence, the two departments should be improved in unison to maintain the proper balance.

ACKNOWLEDGMENT.—From a paper read before the Illinois Section, American Water Works Association.

New Specifications and Method of Financing Paving

By J. R. Haworth

STANDARD paving specifications adopted in March, 1926, by the City Commission of Huntington, W. Va., set out a method of payment used, so far as is known, in few, if any, other cities. The method is known as the "certificate plan," and has been successfully in operation in Huntington for a number of years.

The newly adopted specifications were prepared by Robert W. Coffin, Assistant City Engineer. Specifications used by several other cities were examined before preparation of the new Huntington booklet, and the tables for tests of materials and other tests were taken chiefly from results of experiments by the American Society for Testing Materials. The new standard specifications contain several requirements to apply to local needs and local conditions, such as special requirements for precaution against slides caused by springs and seepage.

A clause requiring contractors on all work to finance tests of materials was inserted in the new standard specifications after study of several years of experience by city officials in testing materials at the cost of the city. The former method, it was finally concluded, was unsatisfactory.

The newly inserted clause reads as follows:

"The expense of the inspection by the laboratory shall be included in the price bid by the contractor for items involving the use of cement, brick, or asphalt. The cost of the testing shall be at a price agreed upon between the Board and the authorized testing laboratory, which will be as follows: Two cents per barrel of cement, 5 cents per square yard of asphalt pavement, 45 cents per 1,000 brick, and $6 per car of asphalt filler. The contractor must show testing reports before the above material can be used. The Board reserves the right to have borings made of pavement bases for test of thickness before allowing the placing of surfaces."

The method of payment is set out as follows:

"Upon completion of the work and its acceptance by the city, the engineer shall determine the amount of payment due the contractor. Payment will then be made by certificates of indebtedness, each one of which shall equal a per cent of the amount due. These certificates shall bear 6 per cent interest. The payments shall be made as required by city ordinance.

"The city of Huntington reserves the right to pay any portion of this amount in cash without interest within thirty days from the acceptance of the work, should it so elect, on any certificate assessed against city property.

"The charter of the city of Huntington, W. Va., requires assessments for such improvements to be made payable in installments;

"(a) If not more than $50, in one installment due in thirty days after date of certificate;

"(b) If not more than $100, in two installments due in thirty days and on the first day of May of the year succeeding the year in which the certificate was issued;

"(c) If more than $100 and not more that $150, in three installments due in thirty days and on the first day of May in the year succeeding the year in which the certificate was issued and on the first day of May one year thereafter;

"(d) If more than $150 and not more than $200, in four installments:

"(e) If more than $200, in five installments...

"Said assessments to draw interest at the rate of 6 per centum per annum, payable on the due date of each principal installment. Installments of the certificates therefor are evidenced by principal installment coupons which show the amount of such installments and are signed by the mayor and the clerk of the city of Huntington, W. Va.

"The interest on the certificates and the installments thereof are evidenced by coupons which show the amount of such interest, the due date thereof, and are signed by the mayor and the clerk of the city of Huntington, W. Va.

"Upon the due date of any principal installment coupon, excepting the first, the accrued interest on so much of said assessment as remains unpaid shall be due and payable in accordance with, and as evidenced by, interest coupons. The interest on the first principal installment coupons shall be paid when the said principal installment coupon is paid....

"When the amount of the assessment represented by the certificate and principal installment coupons has been duly levied, equalized and confirmed, and along with the accrued interest is a lien upon the real estate therein mentioned, and is also a debt against the owner of said real estate, the holder or bearer of the certificate may enforce the debt evidenced thereby as provided by law."

These certificates are usually sold by contractors at a discount to finance the work, and find a ready market.

Hidden springs and seepages have caused much difficulty in street-grading work in Huntington in past years. A new clause in the recently adopted specifications covering this problem, reads:

"The contractor must make all necessary allowance for shrinkage and settlement in the embankment, as they will in no case be considered complete until at the proper height after consolidation. Springs or seepage encountered shall be drained with porous drain tile which will be paid

for at the price bid. The contractor shall be held liable for his neglect in making an improper embankment."

A unique provision refers to location of T and Y branches, the location of which shall be marked to afford an easy guide for any person seeking it after it has been covered over. A clause provides that a branch location shall be marked by a vertical wood strip two inches by one inch in cross-section, reaching from the end of the branch to the bottom of the pavement, or to within one foot of the surface of the ground, and also with markers of sufficient size.

The specifications cover many forms of brick, asphalt, concrete, and bituminous macadam paving. A new clause provides for the use of 2½-inch brick not previously included in paving specifications of the city. Stringent requirements are set out for the laying of concrete base and pavement, a new clause specifying a slump test not greater than 2 inches or less than ½-inch when subjected to the slump test for consistency. Spreading of concrete by beam and bucket is required on all concrete work, except for curb, gutter, and masonry. Burlap cover, earth cover, and systematic sprinkling are all required for concrete pavement.

A New Problem in Highway Maintenance

DUST storms which covered the western half of Minnesota during the last of April and the first of May created a new maintenance problem for the Minnesota Highway Department. The storms affected almost every county from the Canadian border to the Iowa line. They damaged grain fields, impeded traffic, and caused general inconvenience.

More than 150 miles of ditches along the state highways were filled level with the ground. Judicial and county road ditches were filled. In the latter case there is no way of opening the ditches except by the usual legal procedure, which requires petitions, hearings, and assessment of benefits. Clearing the trunk highway ditches required considerable work and expense, but, whether done by regular patrol men or by special crews, it was completed without red tape or unnecessary delay.

What to do with the accumulated dust and dirt is one of the problems. When ditches are made simply to get dirt for grading, the drifted dust will be allowed to stay, but ditches needed for highway drainage will be opened as soon as possible. The drifted dirt is light, fine, fertile top soil, and in most cases the farmers are glad to have it spread back on the fields. In many cases, however, this cannot be done without damage to growing crops.

Transforming Waste to a Park of Beauty

VERY few persons enjoying the artistry and restfulness of a public park visualize the processes by which the pleasing picture is created. Few stop to think that men and machinery have transformed a former waste of sand or weed-grown fields into a bower of beauty. In Marquette Park, Chicago, it was necessary to move 750,000 cubic yards of earth to build a series of lagoons and hills, transforming the 320 acres of level land into rolling vistas.

The contract for this great project was awarded to the J. J. McCaughey Company, of Chicago. Having had wide experience in various kinds of earth-moving machinery, they determined to make a thorough test of motorized outfits on this project. They employed tractors for pulling elevating graders and dump-wagons without the use of draglines, steam shovels, or similar equipment. The work in the park was begun with one Caterpillar tractor pulling an elevating grader, and with horses pulling the dump-wagons. The first tractor pulled the grader through the giant clay with comparative ease despite the fact that the earth was very sticky. From time to time more Caterpillars and La Plant-Choate 6-yard dump-wagons were put on the job, until there were finally ten Caterpillar tractors at work. Frequently the tractors worked in day and night shifts, but, based on a 9-hour day, the equipment has moved as much as 90,000 yards per month. This job has attracted much attention from public officials throughout the Middle West, and from contractors.

GRADING OPERATIONS IN MARQUETTE PARK, CHICAGO, ILL.

Municipal Research Helps City Officials and Saves Money in Hoboken

By Randolph O. Huus

Director, Bureau of Municipal Research, Chamber of Commerce, Hoboken, N. J.

MUNICIPAL research in Hoboken is no new activity. Ever since the Robert L. Stevens Fund was established in 1911, city problems have received the attention of some local organization. This paper will trace only the municipal activities of the Hoboken Chamber of Commerce from 1920 to the present, believing that such a review will prove of interest to similar bodies.

In March, 1920, Philip H. Cornick, now staff specialist on taxation for the National Institute of Public Administration, was engaged as Assistant Manager. During his stay Mr. Cornick devoted almost his entire time to municipal affairs.

Fire Prevention Activities

Fire prevention claimed first attention. The Fire Prevention Committee of the Chamber, with Gilbert E. Stecher, special agent for insurance companies, as Chairman, had been especially active. An ordinance providing for a Fire Prevention Bureau in the local fire department had been prepared from the model of the National Board of Fire Underwriters. The necessity of a detailed and comprehensive fire prevention code to supplement this ordinance was apparent. After investigating other municipal fire codes, fire hazards peculiar to Hoboken, and the specifications of the National Board of Fire Underwriters, Mr. Cornick and Mr. Stecher prepared a Fire Prevention Code. The completeness and detail of this Code have made it a model for many other cities.

A surprising and almost immediate result of the emphasis on fire prevention came when the Hoboken Chamber of Commerce won the Grand Award for the year 1923, in the first Inter-Chamber Fire Waste Contest held by the Chamber of Commerce of the United States. The total fire loss dropped from $417,496.37 in 1922 to $157,041.23 in 1923. While fire losses increased again in 1924 and 1925, Hoboken's record is still excellent, winning second place among cities of 50,000 to 100,000 population in 1924 and a place on the honor list in 1925. Chief Engineer John J. Gilday of the Hoboken Fire Department deserves special credit for cooperating so effectively with the Chamber's program and showing what can be accomplished by a Fire Prevention Bureau that is on the job.

Zoning and Waste Disposal

Because of its nearness to lower Manhattan, Hoboken has many manufacturing plants. Though its population is about 70,000, its area is only 1.3 square miles. Yet, even in this limited area, there are about 200 acres of vacant land in the west and northwest part of the city adjoining the industrial area. In the fall of 1920, the "Owens Plan" was initiated by a Chamber of Commerce Committee. The plan was to intensively develop this industrial area by connecting it with adequate switching facilities to adjacent railroad lines. Mr. Cornick took advantage of this opportunity to point out the necessity of protecting this area by proper zoning, as well as the advantage to the city in greatly increasing the existing ratables, seriously reduced by the United States Government's acquisition of valuable pier properties. The outcome of this agitation by the Chamber was that the City Commissioners engaged Herbert S. Swan to draw up a zoning ordinance, which they adopted January 17, 1922. However, enforcement of municipal zoning regulations to date has been seriously weakened by adverse decisions of the New Jersey courts.

As in other cities, the removal of garbage and refuse is a serious problem. For years city wastes had been dumped on vacant land in Hoboken. This piling-up of garbage was hurting property values and becoming a health menace. Agitation by the Chamber with a display of actual photographs of the dangerous conditions, caused the City Commissioners to purchase, on March 1, 1922, at a cost of $19,845, an outlying tract of land in Secaucus, where the garbage is now hauled and dumped.

Bureau of Municipal Research Organized

In August, 1921, Mr. Cornick resigned, and in June, 1923, Wylie Kilpatrick was engaged as the Director of a Bureau of Municipal Research established on the initiative of A. W. Coffin, the Chamber's Manager. This Bureau was financed from year to year by a fund contributed to by local

"Research Bureaus as a Function of Chambers of Commerce"

Under this title The American City published in the issue of January, 1926, a paper by John B. Blandford, Secretary of the Bureau of Research of the Chamber of Commerce of Newark, N. J. In this paper Mr. Blandford pointed out that a chamber of commerce is so organized that it can not only develop and interpret the facts, but can aggressively press the resulting recommendations.

Knowing that many chambers of commerce which are not now conducting bureaus of municipal research would welcome definite information as to their operation, the accompanying article on recent activities of the Hoboken Bureau is published. It is believed that many an organization which is aiming to strengthen its civic work could conduct such a bureau to advantage.

taxpayers. The policies of the Bureau are determined by a Taxpayers' Committee of the Chamber with Julius Lichtenstein, a local attorney, as Chairman. An alarming increase of 137 per cent in the total debt of the city from 1916 to 1923 was the impetus for the first survey. Mr. Kilpatrick prepared an intensive study of the city debt administration, with complete tabulations showing all future debt charges for sinking fund and serial bonds outstanding. Specific changes were recommended to the City Commissioners which, if adopted, would result in savings of $750,000, for debt charges over a ten-year period.

The first result of this study was the grading of the installments of a serial bond issue of $428,000 by the City Commissioners in such a manner that the taxpayers' burden will be reduced about $34,700 in the next nine years. The extent of debt charges for very heavy street and sewer construction costs during and immediately after the war fell with unusual hardship on the present taxpayers when the installments were equally divided.

A New Water-Supply Contract

For years Hoboken secured its water-supply from the Hackensack Water Company, of Weehawken, N. J. An increase in water-rates from $1 per 1,000 cubic feet in 1918, to $2 in January 1923, caused dissatisfaction. Contracts were submitted by the Hackensack Water Company and Jersey City. Mr. Kilpatrick compared in detail the merits of each proposed contract as regarded potability, water pressure and rates. It was estimated that a gross saving of $179,429 yearly would be made if Jersey City supplied the water. Finding no essential difference in potability or water pressure and a genuine difference in cost, the City Commissioners awarded the water-supply contract to Jersey City.

Traffic congestion in Hoboken is a serious problem, due to the heavy trucking from its own industries and from those in adjacent cities to the ferry lines that cross the Hudson River to lower Manhattan. With this in mind, a report on Regulation of Traffic was prepared. While the traffic plan was not adopted by the City Commissioners, a Junior Police Patrol and a special Traffic Squad advocated in the report were organized shortly thereafter.

A Study of Miscellaneous City Revenues

To relieve the excessive tax burden imposed on real property, a comparative study of miscellaneous revenues in other cities was made. As a result an ordinance sharply increasing the municipal charges for general licenses, health permits, and jitney franchise taxes was drafted. It was found that the city was spending considerably more to render certain inspectional services, such as those connected with its health activities, than it was receiving from the concerns benefited. The City Commissioners viewed this ordinance favorably, and it went into effect June 1, 1024. From that date to January 1, 1926, receipts from these miscellaneous revenues showed a net increase of $70,662.

It was the further intent of the Research Bureau that this annual excess should constitute a revolving fund to be used to pay interest charges on tax anticipation notes, which now amount to $50,000 a year. This interest outlay becomes necessary because the fiscal year starts on January 1, while the first half of the year's taxes do not become delinquent until June 1. The revolving fund was not established, but the increase applied to salary costs for 69 additional policemen and 36 firemen appointed May 20, 1924. This meant an increase of $92,794 in the 1925 budget for police and fire salaries over the 1924 appropriations, of which real property is relieved of $45,000 annually because of the miscellaneous revenue study.

Equalization of Assessments

Hudson County is considerably over-assessed as compared with other counties and Hoboken ranks high in property assessments in the county. The result is that Hudson County pays more than its fair share of state expenditures, and Hoboken more than its due of state and county charges. Realizing the need for revising the existing tax machinery in the state, a comprehensive survey of the methods of the other states was made. A chart, illustrating in detail the legal steps in the equalizing procedure of each of the other states, was prepared. In two recent legislative sessions the Chamber of Commerce sponsored a bill to revise the tax procedure along the lines suggested by this study, but no action has been taken as yet.

The above surveys were all prepared by Wylie Kilpatrick, who resigned as Director of the Municipal Research Bureau and was succeeded on October 1, 1924, by the writer.

Analysis of Local School Expenses

During the fall of 1924 an analysis of local school expenses was made. In 1914 the cost per pupil for current expenses only was $54.81 per pupil; in 1924 the per pupil cost had grown to $132.83. This was a net increase of 174 per cent, while the pupil attendance increase was only 13.3 per cent. After making allowance for the decreased purchasing power of the dollar, the Bureau recommended in a report to the Board of Education an immediate cut of $25,810 in the 1925 budget and a net reduction of $119,163 in school appropriations during the next few years. The Board of Education received the report in good spirit, reconsidered the already adopted budget, and made a net reduction of $26,550. Again, when the 1926 budget came up for passage, the Bureau submitted a statement requesting specific decreases amounting to $50,000. The Board of Education adopted a budget for 1926 that made a net reduction, in all items other than salaries, of $48,985. These substantial decreases were made in expenditures for repairs, text-books, school supplies, equipment etc. Thus, in the last two years the Board of Education has made net reductions of $75,535 by a careful scrutiny of budget estimates.

A Survey of Budget Items

It was the intention of the Research Bureau to prepare a complete municipal budget for 1926 and submit it to the City Commissioners for their consideration. However, this task was too large to complete satisfactorily in one year's time. So the survey was limited to all items in the budget except salaries and personnel, debt charges, and revenues. By far the larger number of these items were for supplies. For detailed recommendations the comparative budget items of the preceding two years were of little value. It was necessary first to analyze and compare the supplementary estimates whose total comprised a budget item. But often such an estimate was only a lump sum request and did not tell much of a story. For ex-

AIRPLANE VIEW OF HOBOKEN, N. J., BY FAIRCHILD AERIAL SURVEY, INC.

ample, there would be a budget item, Health—Supplies, Medical—$6,250. And in the supplementary estimates an item, Anti-Toxin and Vaccines—$3,000. This made it necessary to determine the quantity, quality, and price that the Bureau would recommend for hundreds of items.

The first step was to keep a running record of every warrant issued by the city during the year. This was an index to the payee, the prices paid, and the nature of the supplies purchased, and proved especially valuable where first-hand investigation was not feasible. Wherever possible, first-hand data were collected. Thus, an appropriation for flowers in a certain park was $400. The number of flower-beds in this park were counted, the areas determined, the number of plants, the replantings, various park superintendents in nearby cities were interviewed, and park budgets and nursery catalogs were consulted for specifications and prices. This made it possible to determine with exactness the quantities needed, the most suitable varieties, and current prices. Following this method item by item, a detailed budget was prepared and submitted to the City Commissioners recommending reductions of about $100,000 over the prior city budget. The City Commissioners carefully considered the reports and made reductions in the 1926 budget that totaled $27,833. On account of some temporary increases, however, the net reduction was somewhat less—$13,606. The actual net decrease in these supply costs, as shown by an item-by-item comparison of the 1924 and the 1926 budgets, is $56,009.

Snow-Removal Methods and Costs

Two heavy snowfalls in the winter of 1924-1925 proved expensive to local business and manufacturing interests by seriously retarding traffic movement. After investigating methods of organization in other cities, types of snow-removal apparatus, personnel and costs, the Research Bureau prepared in detail a plan for snow removal based on local conditions. This plan was submitted to the Commissioner of Streets and Public Improvements, James H. Londrigan, who put into practice a part of this plan during the winter of 1925-26. While no saving in cost was effected, as the Bureau believes would have resulted if the plan had been followed completely, there was a distinct improvement in the speed and thoroughness with which the principal streets were opened to traffic.

Street Signs

For years Hoboken has been handicapped by a lack of street signs. True, there were a very few sign plates on buildings scattered throughout the city—the remnants of a sign system of another era. Realizing this, a representative of the local service clubs appeared before the City Commissioners and requested a modern street-sign system. The Research Bureau then prepared a report based on a block-to-block survey of the city corners. This report recommended that the New York type or White Way sign be attached to the electric light poles on the trolley-car lines and that sign plates be attached to buildings in the rest of the city. Detailed estimates of the costs of material and erection were contained in the survey. The recommendations made were adopted, with little modification, at a final total cost of $4,650. If the original recommendation of the service clubs providing for a complete installation of signs on special posts had been adopted, the cost would have been about $15,000 with no equivalent advan-

tage. Thus, by following this plan, a conservative saving of $10,000 was effected.

Public Recreation

A recreation survey of the city has just been completed, particularly emphasizing the need for a readjustment of the existing personnel to provide for more trained recreation leaders, and presenting detailed costs for current operating expenses and major improvements needed for the next five years. It is the purpose of this report to anticipate all legitimate current expenses as well as all improvements needed for this period, together with a detailed statement of costs. Commissioner Harry L. Schmulling of the Department of Parks and Public Property, has taken an important forward step by placing a trained recreation leader in charge of four play areas controlled by the city, under the general direction of J. Anthony Durstewitz, Superintendent of Recreation. A complete schedule of vigorous outdoor sport games will be carried on during the summer months.

In conclusion, the writer wishes to state that whatever has been achieved has been the result of a frank understanding between the Research Bureau personnel and the City Commissioners and the Board of Education. Their willingness to cooperate with the Research Bureau of the Chamber has resulted in some substantial municipal advances.

Chicago Has Learned Her Lesson—But How About Your City?

CHICAGO is winning back her water-front. Seventy-five years ago she gave it up to the Illinois Central Railroad for some hundreds of dollars; today she is developing its possibilities of beauty and recreation at a cost of many millions. The city has twenty-five miles of lake shore, but for many years only seven miles of it has been accessible; Jackson Park, where the World's Fair was held in 1893, has two miles, Grant Park, one, and the municipal pier, Lake Shore Drive, and Lincoln Park have the remaining four of the seven miles of Lake Michigan frontage hitherto open to the citizens.

In 1851 South Michigan Avenue was a shore drive, and the Town Council was having difficulty in finding funds to maintain breakwaters against the lake surf. The Illinois Central petitioned for a right of way for its tracks along the south branch of the Chicago River, almost a mile west of the lake. The Council compelled the railroad to enter Chicago by way of the lake shore, so that its tracks would form a breakwater from Fiftieth Street to Park Row. Since then, says George P. Stone, in the *New York Times*, "the tracks of the I. C. have held the shore from the Loop to Hyde Park. Instead of trees and lawns and beaches, that section of shore has only rocks and rails. Inside the tracks slums and industrial districts have developed, instead of the gracious residential expanses that hold the north shore."

Now the railroad is electrifying its lines. Taking advantage of this doing away with smoke, the South Park Commission is building an extensive shore park outside the tracks; 125 acres were redeemed last year, and it is hoped to accomplish as much this year. The new Field Museum of Natural History in Grant Park stands on made land, so does Soldiers' Field, the South Park stadium, and for a mile south of the museum a shore boulevard is in use. Eventually the lake front will be one unbroken park from the mouth of the Chicago River to the southern end of Jackson Park. Contracts totaling $3,000,000 have been let for extending the park; five bridges are to be built to carry five principal streets over the tracks to the shore drive. The barren campus of Grant Park is to be landscaped. The Commissioners hope to build the $2,000,000 Shedd Aquarium, a new Chicago Yacht Club near Madison Street, and a $500,000 memorial fountain at Congress Street, and at the same time to reconstruct the Fine Arts Building in Jackson Park.

Arrangements have been made with the Lincoln Park Commissioners whereby the south side shore drive will be carried across the Chicago River to join the Lake Shore Drive and the Lincoln Park Boulevard system. If a bridge, already designed, is built at the mouth of the Chicago River, motorists will be able to travel 14 miles without losing sight of the waters of Lake Michigan.

CHICAGO TAKES BACK LAKE MICHIGAN SHORE

Town Council Gave It Away Seventy-Five Years Ago—Once Despised Waterfront Will Make Nine Miles Of Parks and Playgrounds

Will the New York Times have to publish a similar heading about municipal shortsightedness in your city seventy-five years from now?

Dangerous Road Intersections Eliminated at Small Cost

By Fred M. Garnett

Division Officer Engineer, State Highway Department of Georgia

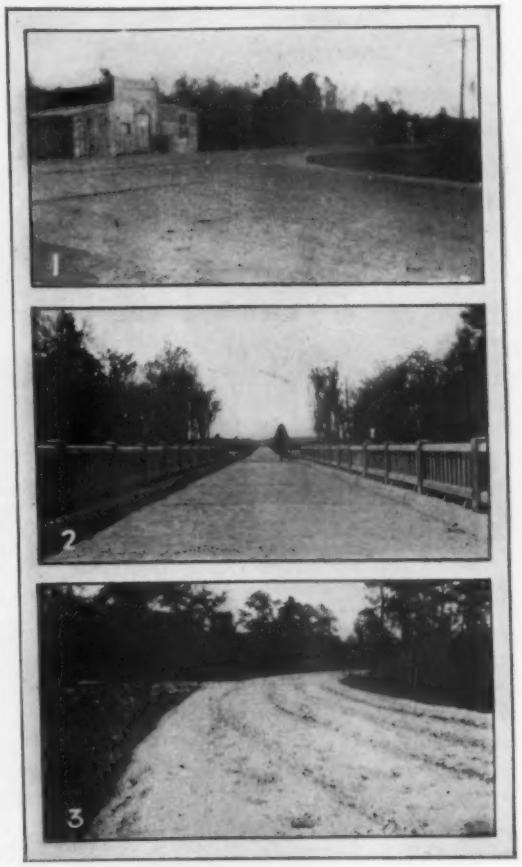
THE state of Georgia is vigorously pushing forward a program which calls for the construction of a hard-surfaced highway from the Savannah River crossing eight miles above Savannah, to the Georgia and Florida boundary line. This is part of the great Coastal Highway which will connect cities along the Atlantic Seaboard.

For a long time both South Carolina and Georgia felt the need of a crossing over the delta of the Savannah River, but it was impossible for the counties contiguous to Savannah to finance such a great undertaking until state and Federal aid funds became available. The bridge nearest to Savannah was at Augusta, Ga., approximately 125 miles away. In 1920 the counties of Beaufort, Jasper, and Hampton, in South Carolina, and Chatham, in Georgia, decided to make the delta crossing a reality, with the aid of Federal and state funds.

The construction of this crossing is perhaps the most important factor in the materialization of the Coastal Highway and shortens the coastwise tourist route almost a hundred miles, greatly increasing traffic. The river crossing is eight miles above Savannah, bridging Front River, Middle River, and Little Back River, and ending about seven miles from Hardeville, S. C. It is about 4.6 miles long, comprises 18,156 feet of earth fills over the marsh, and has six concrete bridges whose combined length is 6,219 feet. Work was begun in October, 1922, and completed in July, 1925, and was officially dedicated October 7, 1925. The total cost was $720,779.

It was necessary to construct an approach to this crossing on the Georgia side of the river. Due consideration had to be given to the saving of distance and to the utilization of the paved concrete highway leading into Savannah. The line decided upon traverses Birkenhead Street from its intersection with the Savannah-Augusta highway to its termination, then crosses a swamp and connects with the river crossing. This approach was constructed by the State Highway Department at a cost of $42,105, shared equally by Chatham County and the Federal Government. The work was begun in May, 1923, and finished in July, 1924. The clay-gravel surface has been given a double-surface treatment, and later the approach will be hard-surfaced, as traffic is constantly increasing.

Having completed these two projects, the State Highway Department was faced with the problem of eliminating two dangerous right-



1.—View of right-angle street intersection that was eliminated by extending project F. A. 318 through the Port Wentworth Terminal Corporation property. This hazardous crossing has been abandoned

2.—Savannah River bridge, known as project F. A. 286, which connects Georgia with South Carolina at a point 8 miles above Savannah, Ga. Completed July, 1925, and officially dedicated October 7, 1925. A vitally important link in the great Coastal Highway. One of the six concrete bridges before being surfaced

3.—Savannah River bridge approach, project F. A. 318, showing part of hydraulic sand fill through swamp. This project forms part of the great Coastal Highway under construction. The Savannah River bridge approach project was completed July, 1924

angle intersections in the village of Port Wentworth. The alarming growth of traffic that had come with the improvements, combined with the traffic over the Savannah-Augusta highway, merging at this intersection, presented grave risks. A thousand feet east of this point was another dangerous intersection where traffic entering and leaving Savannah crossed the Savannah Electric Railway car tracks.

In 1919 Chatham County had built approximately 15 miles of concrete pavement on the Savannah-Augusta highway, and it was desirable that in reducing the hazards, the State Highway Departments should lose as little as possible of the paved portion. The only feasible way to accomplish this was to extend the Savannah River approach across the Port Wentworth Terminal Corporation property and connect with the Savannah-Augusta highway at about 1,800 feet south of the intersection that crossed the car tracks. This extension cost $9,655, which is considered insignificant in consideration of the great good accomplished. The cost was borne equally by Chatham County and the State Highway Departmen..

It was necessary to move eight houses off the right of way before this stretch of highway could be constructed. The right-angle road intersection at the beginning of the project has been replaced with a curve and widened out considerably. Traffic coming from Augusta into Savannah is directed over this curve, while traffic from over the Savannah-South Carolina bridge is protected by following a tangent for 3,600 feet and then two easy curves, after which it enters the Savannah-Augusta highway safely below the once hazardous intersections. The eccentric space between the road intersection and the curve which diverges from the Savannah-Augusta highway was surfaced with clay-gravel and has been double-surface-treated until it is permanently paved. This expedient gives additional space to traffic, and will help to diminish the chances of accident.

The elimination of these right-angle road intersections was only a simple engineering feat, but is deserving of notice because it brings out the fact that a great amount of good can sometimes be accomplished at small cost.

New Type of Suburban Shopping Area Proposed

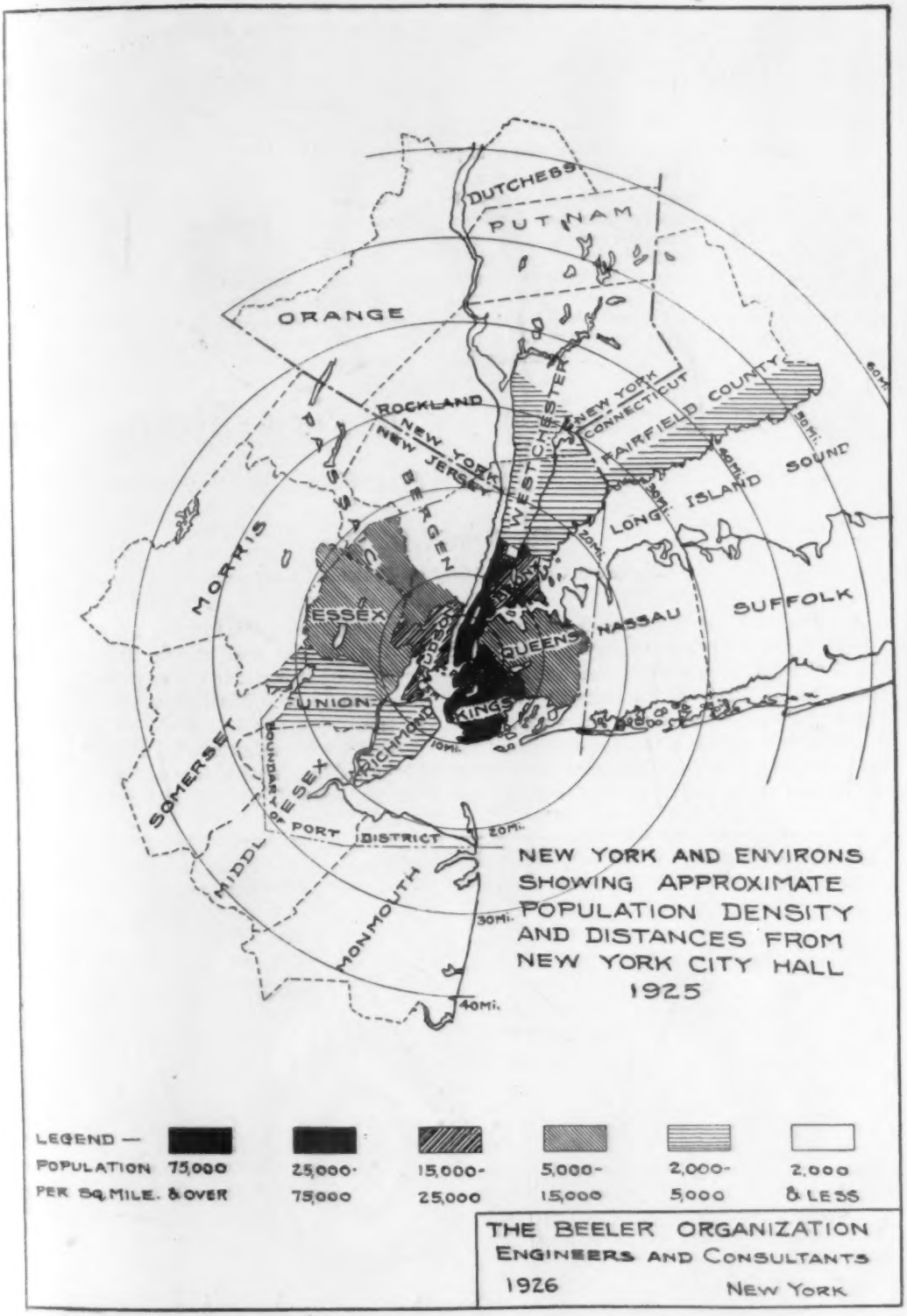
THAT the growing traffic congestion in the cities, with its obstacles to suburban shoppers in reaching down-town stores by automobile, makes possible a new type of shopping center in suburban communities, is pointed out in a recent report of the Beeler Organization, of New York. From this report the accompanying map showing the varying degrees of congestion of population in the New York region is reproduced. The report, which has been prepared for the Belmoy Corporation of New York by Harold H. Dunn, Engineer of the Beeler Organization, says in part:

"The attempt to overcome congestion while at the same time retaining the present concentrated form of city development is quite similar to the proverbial attempt to lift oneself by his bootstraps. Each increment of relief only opens the way for new increments of population, traffic and building, and no one can foresee where and when a balanced development will be reached.

"The growing traffic congestion in cities is making it increasingly difficult for the suburban customers of city stores to reach these stores and shop in leisure and comfort. Surveys show that these people are reducing the number of their shopping trips to the stores in the congested centers, and are shopping in a more hurried manner, and many are forced to reach the stores by congested transit facilities when they prefer to use their automobiles. A larger and larger proportion of their buying is being done in stores within their own suburban area.

"Surveys also show that merchants are looking with increasing favor on the plan of establishing branch stores in suburban centers as a means of retaining their position in the metropolitan market. Subcenters have been developed in many cities throughout the country, but they have followed the old conventional lines, and as they grew their usefulness has been throttled by traffic congestions. The modern center must be planned to suit modern conditions, chief among which is the apparent determination of people to shop by automobile. The suburban department store, for example, will fall short of its purpose and possibilities if it is not planned to avoid the difficulties and drawbacks with which its parent in the congested city is beset.

"Replies to a questionnaire recently sent to several thousand of Westchester County's women shoppers indicates that only 9.1 per cent of those who shop in New York City do so by automobile regularly; an additional 16.7 per cent shop infrequently by automobile, and a great many of them find it necessary to store their automobiles in garages outside of the business district. The replies showed, however, that a much larger proportion of these customers of New York stores desired to use their automobiles for shopping purposes but were unable to do so because of traffic



THE SUBURBAN AREAS OFFER MUCH BETTER POSSIBILITIES FOR COMFORTABLE SHOPPING BY AUTOMOBILE THAN THOSE IN CONGESTED CENTERS

congestion. A similar survey made by several Chicago department stores among customers who they thought from appearances would be likely to have arrived by automobile, shows that only 11.1 per cent shopped by automobile and that 17.8 per cent of this number left their automobiles in garages outside of the loop district.

Off-the-Street Parking or Garage Space Must Be Provided

"This manifest desire cannot profitably be ignored as new business centers are developed. The streets of any business center can never be of sufficient size for both moving traffic and unlimited parking. The modern business center must provide off-the-street parking or garage space for customers' and employees' cars. The suburban centers now developing in the more open spaces where property values are relatively low have an exceptional opportunity for building to conform to modern conditions.

"The suburban store can provide adequate parking space within its grounds for customers' and employees' automobiles at reasonable cost. Customers can then reach the shopping floors easily and can shop leisurely and in comfort without fear that their cars may be stolen or that some parking restriction may be violated. Nor will they be forced to negotiate blocks of congested streets on their return trip home. Ample parking space on the store's own grounds, where customers' cars could be left in safety, is so unusual and so desirable in this day that it offers a convincing advertising feature.

"A store offering daylight illumination and fresh air in all departments is especially attractive and is a great aid to customers in making selections of merchandise."

Police Signaling by a New Method in Berkeley

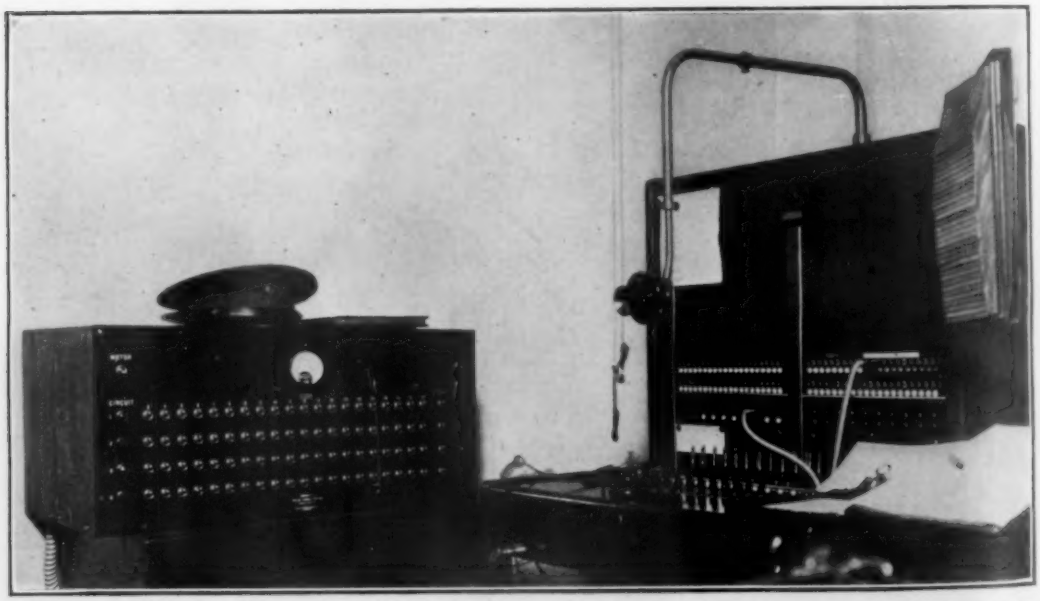
By Frank B. Rae

Electrical Engineer, City of Berkeley, California

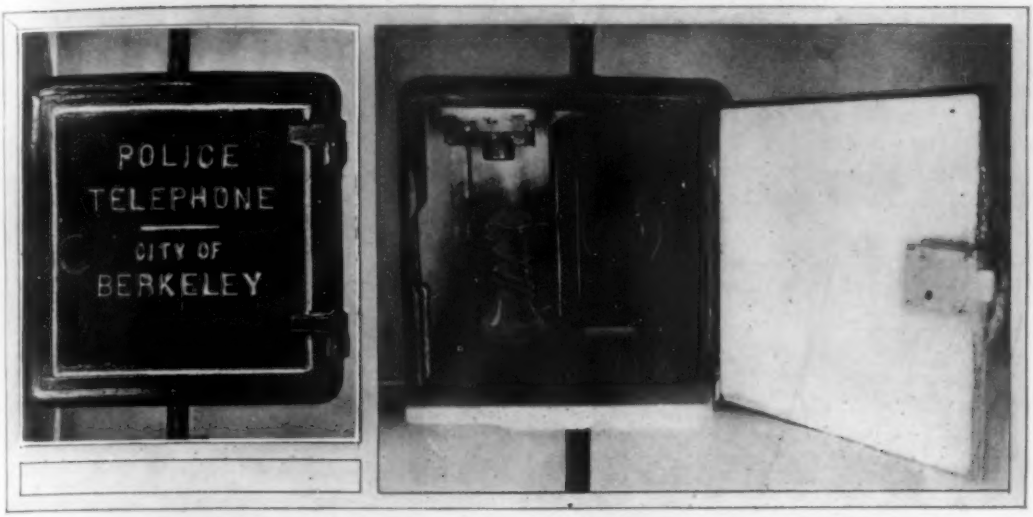
A SYSTEM for signaling to policemen on duty throughout the city by means of electric lamps was devised and put into operation in Berkeley by August Vollmer, Chief of Police, some twenty years ago.

The necessity for a more efficient system has been recognized by Chief Vollmer for a number of years past, and at his instigation a new signaling system, performing all the functions of the old one and having many additional features of importance, invented by the writer, has recently been installed in place of the old system.

As a first requirement, the daylight visibility of the red-light signal lamp was increased about 500 per cent. This was accomplished by in-



AT LEFT, THE RAE POLICE SIGNAL TRANSMITTER. AT RIGHT, THE TELEPHONE SWITCHBOARD INSTALLED BY THE TELEPHONE COMPANY IN BERKELEY FOR OPERATION IN CONNECTION WITH THE TRANSMITTER



EXTERIOR AND INTERIOR VIEWS OF NEW POLICE TELEPHONE BOX IN BERKELEY

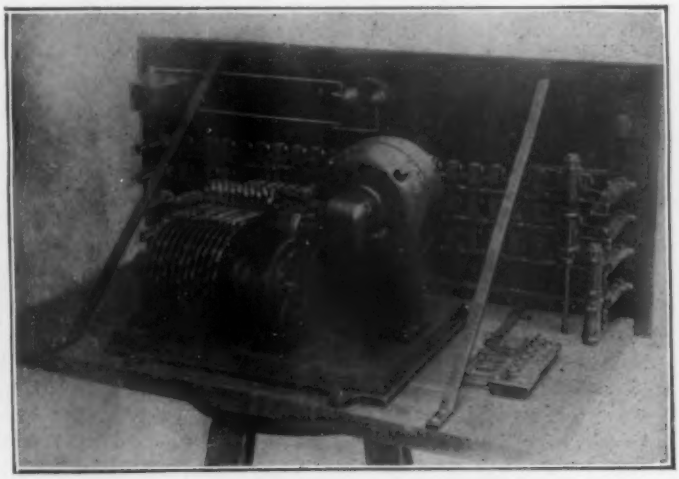
stalling modern Mazda lamps of 200 watts enclosed in General Electric Novalux street-lighting fixtures, in which a Holophane ruby bowl four-way refractor was substituted for the usual white globe of the unit. The ruby light was then clearly visible in the sunlight for a distance of 2,000 to 2,500 feet, as compared with 300 to 500 feet for the carbon-lamp-red-globe combination.

The new system employs a method of wiring by means of which a single relay of special design controls any number of the ruby signal lamps up to fifteen. The number of relays necessary in the Berkeley installation has thereby been reduced from 40 to 4. One relay only is employed for each of the four divisions of the city, each relay operating an average of ten signal lamps. The controlling or relay circuits are operated from the 110-volt distribution circuit of the light and power utility, thus dispensing with the storage battery required by the old system.

In the new machine for transmitting the code signals, all the code wheels are incorporated in the device and made selective with respect to any circuit, by manually operated switches to accomplish the following: (a) any code signal wheel may transmit its signal upon any single circuit or simultaneously on any number of the circuits; (b) different code signal wheels may transmit signals on separate circuits; (c) the lamps may be caused to burn continuously on one or several circuits, and simultaneously code signals may be sent on any or all of the other circuits.

In the operation of the device a pilot lamp in each relay circuit flashes the signal that is being transmitted, or it will show a constant light on any circuit that is set to burn the red signal lamp continuously. These pilot lamps also indicate that the relay controlling the lamps is performing properly.

With the intense and compelling power of the 200-watt lamp ruby refractor unit employed, it was considered unnecessary to install an audible signal to attract the attention of a patrolman. It could, however, be included if deemed advisable.



INTERIOR OF THE NEW POLICE CODE SIGNALING MACHINE, BERKELEY

The Rae police signal system is designed to be operated in conjunction with a police telephone system. The patrolman observing a light signal proceeds to the nearest street box and reports from there over a telephone which is directly connected to a switchboard at police headquarters. This telephone service is most efficient; it is maintained as to circuits, telephones, and switchboard by the company, and the rental cost per year is less than formerly paid by the city to maintain the old system.

The police signal system as installed in Berkeley under the patent applications of the writer is also being installed by the city of Glendale, Calif., and is being considered by Portland and other Pacific Coast cities.

Headlight Testing Campaign Organized by Chief of Police

THE police department of Kansas City, Kans., a city of about 120,000 population, took the initiative in June in a campaign for safer automobile lights, working out a program that may be helpful to communities in which the city departments have more personal relations with the public than is usually the case in the larger municipalities. The success of the project was largely due to the generous and friendly cooperation accorded the police officials, in a purpose obviously for the public good.

Frank M. Wisdom, Chief of Police working through the traffic squad, organized the Safe Lights Campaign thoroughly, and backed it with authority. At the same time that publicity exploited the advantage of carefully inspected and corrected lights, the police announced that owners of cars whose lights offended against ordinances would be arrested. But only three arrests proved to be necessary, either during a week's intensive campaign, or within two weeks afterwards.

KANSAS CITY CARS BEARING THIS STICKER HAVE HEADLIGHTS THAT HAVE PASSED THE POLICE DEPARTMENT'S TEST

Free Testing on Six Evenings

The central feature of the campaign was the free testing of headlights, on six evenings. A location for the test on the main street was announced for the first evening. The Chief purposed to locate the stations thereafter without announcement, anticipating that he would have to intercept motorists in order to secure a representative number. But the public flocked to the testing station that first night, so that locations were given publicity thereafter. Each evening, the stations were overwhelmed with applicants for testing, motorists waiting in lines as much as ten blocks long.

A total of more than 3,000 cars were tested for light defects, about half being given O.K. stickers. This proportion seems very large. This result was due to the fact that after the first night, when scarcely one-tenth of the lights passed the test, motorists had gone to headlight service stations for tests, and there had secured correction of defects.

Garagemen's Cooperation Secured

This remarkable showing of actual attention to headlights and visits to service stations came about through the fact that the Police Department had educated the garagemen, secured their cooperation, and induced more than 25 of them to install the A.A.A. test chart and equipment and supplies for headlight service. This education was attained through a meeting of garagemen a month prior to the campaign, and the cooperation of the Automotive Trades Association of Greater Kansas City, which supplied lectures on headlight service, and also the stimulus of personal solicitation of headlight equipment and supply

houses towards installation of service facilities.

Another contributing factor was the formula for handling cases of rejected lights in the test. Each owner whose lights failed to pass was handed a summons by the traffic officers who conducted the test; the summons requiring the owner to visit the police station within 24 hours and show a statement by a reliable garageman that the defects noted on said summons had been corrected. Not only did practically every one of the 1,500 motorists who received such summons return it with statement of defects corrected; but nearly a thousand motorists visited the garage stations and secured direct the statements of the station managers that the lights had been tested and found correct or, if defects had appeared, such defects had been corrected.

Defective Lights Corrected on More Than 2,500 Cars

The immediate and direct result of the campaign, therefore, was that more than 2,500 motorists whose lights had been defective had such defects corrected and secured the O.K. stickers of the department. All this happened within a period of about a week.

A result of permanent value is that the entire community is awakened to the fact that headlights may be defective, is aware of the defects that might escape notice, and is turning to the 25 or more garages equipped to give tests and service.

The Police Department had formerly been unable, because of inadequate traffic personnel, to enforce the light ordinances. With the public in general cooperating so thoroughly, the police can now undertake the task of compulsion on the few remaining who are wilfully negligent.

Kansas City, Kansas
Police Department
TRAFFIC DIVISION
SUMMONS NOTIFICATION
No. 1499

Kansas City, Kansas 1926

Lic. No. ..... Vehicle Type .....

Name .....

Address .....

Location ..... Time .....

You will report to the Sergeant at Police Headquarters, City Hall, Sixth Street and Ann Avenue within Forty-eight (48) hours with this summons signed by a reliable mechanic of this city showing that the lights on your car have been corrected to conform with the city ordinance. Failure to comply with this order will result in warrant of arrest being issued. Our test shows your lights are:

☐ Out of Focus ☐ Bent Support
☐ Thorough Adjustment ☐ Broken Lenses
☐ Defective Reflectors ☐ Bulbs Blackened

Officer ..... Star No. .....

I certify that the lights on car owned and operated by the above named have been adjusted and corrected to conform with the city ordinance of this city according to your test.

Signed .....

Address .....

SUMMONS FOR HEADLIGHT TEST

NOTE.—Kansas City's Missouri namesake had previously conducted a Safer Lights Campaign, under the auspices of the Kansas City Safety Council, with the cooperation of the Police Department and the Automotive Trades Association. The larger city's campaign was very successful, but was conducted on lines necessary in such communities where a semi-public body takes the lead in movements of this kind.

Traffic Board Established in New York Police Department

BY order of Police Commissioner George V. McLaughlin, effective July 14, a Traffic Board with the following personnel has been established in the Police Department of the city of New York: Philip D. Hoyt, Secretary to the Police Commissioner, Chairman; William J. Lahey, Chief Inspector; William A. Coleman, Deputy Chief Inspector, commanding 16th Division; August Kuhne, Inspector, 2d District, Traffic; Arthur J. Dodd, Deputy Inspector, 1st District, Traffic.

The duties of this new division of the Police Department are defined by Commissioner McLaughlin as follows: The Traffic Board will consider all matters relating to traffic; make general and special studies of traffic conditions and methods, and prepare recommendations for their improvement; consider and report on suggestions concerning traffic which may be received from any source; submit to the Police Commissioner such proposed changes in traffic regulations as may seem advisable, and keep records of street accidents, study their causes, and recommend measures to promote safety on the streets.

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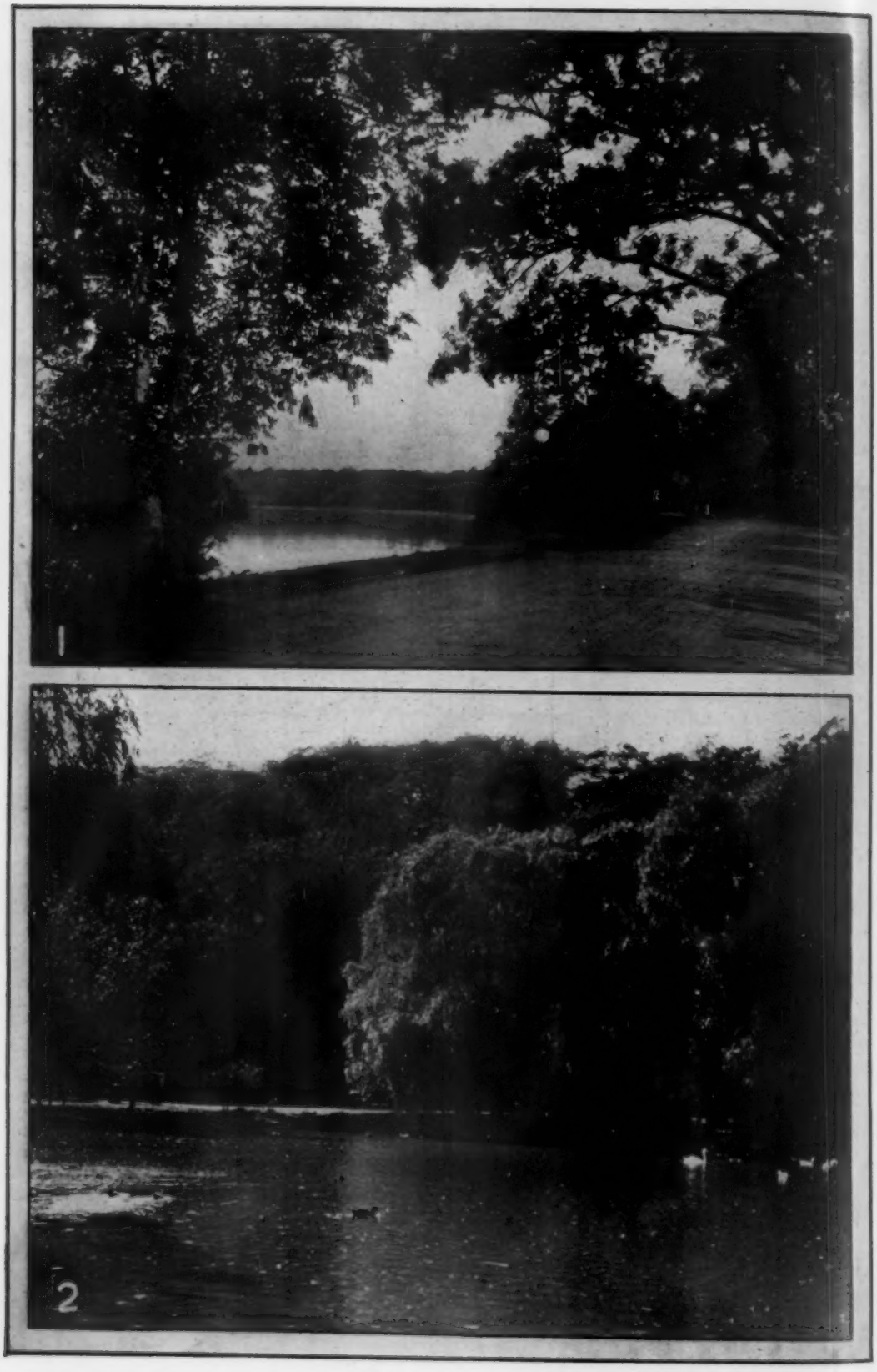
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Park Photographs

by Dr. Wilcox

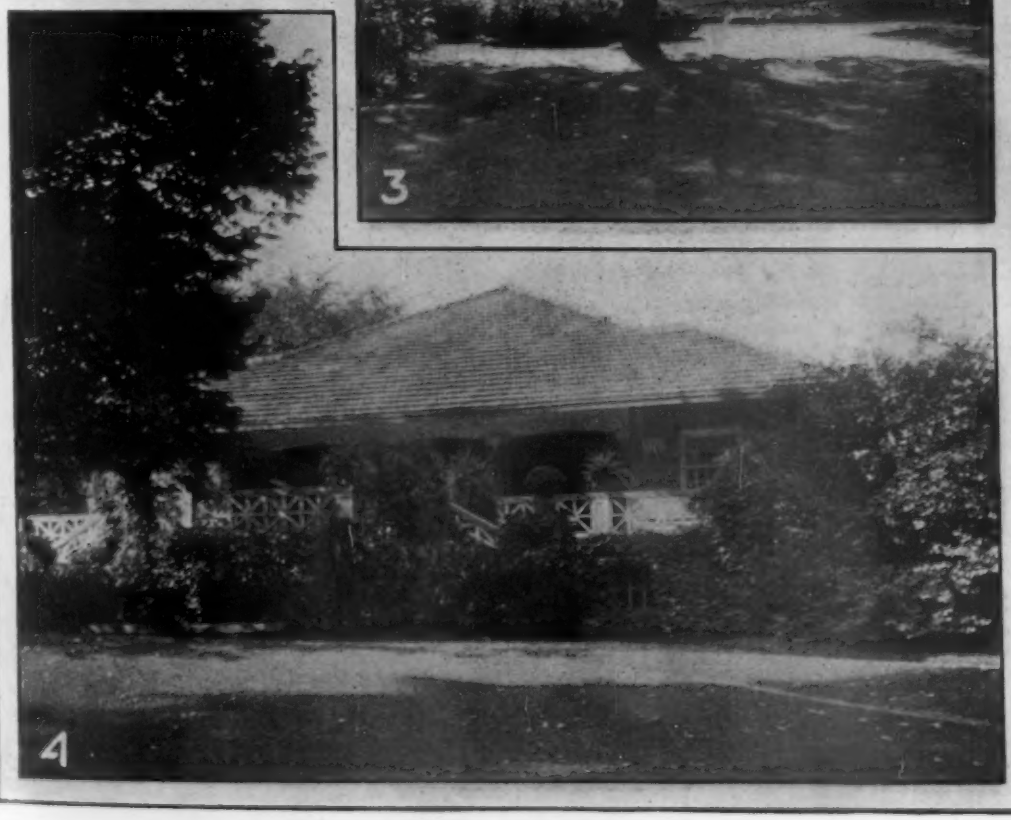
Serving as an expert for municipalities in franchise and public utility matters is the vocation, and photography the hobby, of Delos F. Wilcox, Ph.D., of Grand Rapids, Mich. For the four photographs of municipal park scenes here reproduced, The American City is indebted to Dr. Wilcox. The pictures show:

1.—Lake Harriet, one of several lakes in the Minneapolis park system, taken from Lake Harriet Boulevard, at the north end of the lake

2.—The water fowl at home in John Ball Park, Grand Rapids, Mich.

3.—Flower-beds and a tree in front of the Casino in John Ball Park

4.—The Casino in John Ball Park



To Stop Litter and Improve the Beauty of Public Parks

THESE ten suggestions for park improvement have been submitted to Mayor James J. Walker of New York by the Republican Neighborhood Association, through its President, Mrs. James Russell Parsons. Though formulated with special reference to conditions in Central Park, New York, the needs described are so common as to make the suggestions of general application to conditions in many other cities and towns throughout the United States:

SIGNBOARDS

1. At every park entrance, in a conspicuous position, a signboard similar to the excellent one already near the Fifty-ninth Street entrance and in several other positions reading, "This is your park. Help keep it clean," to be placed. A second signboard to be erected nearby reading, "No papers, boxes or refuse of any description shall be left in this park save in the rubbish bins supplied for the purpose under penalty of the law." This admonition to be repeated in two foreign languages, probably Italian and Yiddish, on the one signboard, as thousands of people visit the park before they speak English or become citizens. Both signboards to be placed also in other conspicuous positions within the park so that they may be seen by every visitor.

RUBBISH CANS

2. Stout rubbish cans in good condition, and emptied regularly, to replace the present rusty and battered ones. These to be situated at regular intervals along the paths, so that visitors may not have the inconvenience they now experience in disposing of newspapers, lunchboxes and other superfluities.

POLICE AND SCOUTS

3. Policemen to be instructed to watch vigilantly for any infraction of above injunctions and to arrest promptly all offenders. The fines and punishments inflicted to be given sufficient publicity to serve as warnings to other potential offenders. It might well be possible to enlist the services of volunteers, Boy and Girl Scouts, as well as others, to aid in the warning of offenders. Given a vigorous campaign to start with, it would not take long to create a wholesome respect for park law.

BENCHES AND CHAIRS

4. A goodly number of benches in good condition, to be placed at suitable intervals along shaded paths as well as in the more public places so as to provide quiet resting places for mothers or nurses with children, or for invalids, as well as for others who crave the peace and quiet denied in other parks of the city. These benches to be secured so as to be immovable. A supply of the small iron chairs nearly always supplied in foreign parks, renting for a few cents, might well prove a popular as well as a remunerative experiment.

PAVING THE PATHS

5. Paths paved with asphalt now so worn or broken as to be a menace to safety as well as a grievous eyesore to be repaired.

DRINKING FOUNTAINS

6. Drinking fountains now out of commission to be repaired.

GRASS

7. The bare, brown stretches of earth where grass once grew, truly "devastated regions," especially those bordering the paths, the big lake, and the now foul and stagnant brooks, to be properly prepared, sown with grass seed and guarded with "keep off" signs.

REPAIRS

8. Rustic posts which formerly supported now vanished rustic rails to be removed. Rustic summer houses when dilapidated either to be repaired or removed, and if the latter their foundations also to be properly obliterated, not left, as now, to be a conspicuous disfigurement.

THE "RAMBLE"

9. Policemen to patrol regularly the Ramble, formerly one of the loveliest regions in the park, but now almost without protection and disfigured by the actions of objectionable visitors.

TRAILS

10. Unsightly brown trails made by impatient pedestrians across supposedly grassy lawns either to be transformed into proper paths or sown with grass seed and guarded as above.

Better Conditions Abroad

In the Association's letter to the Mayor it is pointed out that these suggestions do not touch upon the vital problems of the fast-dying trees, the depauperized soil, and the attempts to encroach upon park property with unsuitable building schemes. The letter also comments on the superior condition of parks in other countries:

"From personal observation we know that the public parks of England, France and Italy, of Mexico and of well-known South American cities, are by comparison models of beauty and order. When friends from those countries visit us in great, rich, far-famed New York, for very shame we try to distract their attention from the litter and decay of Cenral Park. Whatever may be our excuse for this situation, it is not an excuse convincing to any intelligent and self-respecting man or woman."

Why Ancient Peoples Built Their Towns in Layers

WHY did ancient peoples build their towns in layers, one town upon another, so that modern archaeologists find evidences of many successive periods of civilization by excavations in various mounds in Palestine and Egypt?

Let us suppose that a rocky knoll, which stands at one end of a fertile valley and commands the only trade route from east to west through it, has been chosen by some people as the site of its main town. The locality offers facilities for building, stone if required and plenty of good clay, which in the earlier periods was more easily handled in the form of bricks, by the builders. A small town is laid out consisting of dwellings fronting on narrow, twisting lanes. In the center is a large, open market place on which may be erected the shrine of the guardian deity of the people. A heavy wall surrounds the group of buildings, both for defense and as a retaining wall.

An Apparent Mystery Explained

Dr. Clarence S. Fisher, who was for many years in charge of the University of Pennsylvania Museum expedition in Egypt on the concession next to where the tomb of Tut-ank-amen was uncovered, and who has done excavating in Palestine, gave the accompanying interview to a correspondent of The American City shortly before returning to the Near East. Dr. Fisher is representing the University of Chicago in the excavations at Megiddo.

This town remains intact for several hundred years. Its inhabitants, in the usual Oriental custom, allow their rubbish to accumulate in the narrow streets, or throw it over the town walls onto the slopes of the hill. Thus, a shallow layer of debris filled with bits of discarded pottery, lost jewelry, and implements gradually forms about the walls. This is the "debris of occupation." Sooner or later the people of some more powerful rival town attack the place and, having vanquished its inhabitants, loot the houses and finally set fire to the buildings. The roofs are only rough logs, covered with matting and clay, and soon fall, carrying parts of the upper walls into the rooms and filling these and the streets with a heavy mass of debris, in which will be bits of burned wood and charcoal.

It may be that the conquerors realize that the strategic position of the site is too strong to be neglected and so they prepare to build a fortified town of their own there. It is too much labor to remove all the remaining walls of the first town, and besides, any additional height of the hill will render it more impregnable. So the top is simply leveled off, uneven places are filled in or cut down, and the material shifted accordingly. Everything that may have been in the old town, such as pottery and other objects lying on the floors of the houses and left behind in the general sack, remains buried. As the old walls of mud brick are not of much use—since the new town, let us suppose, is to be of rough stone — no attempt is made to raze them, where they do not interfere with the proposed new structures.

This second town, after a prosperous existence, ultimately shares the same fate as the other, although this time perhaps an epidemic sweeps the valley and wipes out the population. For a time the place has a bad name, and its buildings, under the effect of weather, gradually fall into ruin, again filling up the spaces inside and outside the walls, burying such objects as may have been left abandoned.

Some wandering shepherds make the spot a resting place during the pasturing season and erect a few rough huts of mud and reeds. They build their fires in the open and little patches of ashes accumulate. They are not builders nor have they much pottery, so that the accumulation represented by their occupation is slight and would contain only the washings from the old walls, a few crude vessels and simple instruments. Such layers of debris caused by destruction, either deliberate or by time, are called "debris of decay" and can easily be distinguished from those of occupation.

The hill may lie idle, except for the huts on its summit, until some foreign people, perhaps the Greeks or Romans, come into the country and occupy the place for its topographical importance. They level off its summit and build a series of more elaborate buildings upon it. The old area proves too small for their needs, and the new enclosing walls have to be extended.

The new occupants realize the danger of a

water-supply outside the walls and so they sink a great cistern into the solid rock to collect rain-water during the rainy season for use during the dry summers. Such a cistern, then as now in every Arab village, is the meeting place of the women of the town, who come with their water jars for water, and to exchange gossip. Water jars are often let fall carelessly to the bottom. Even refuse which one can imagine some lazy women throw into the cistern when no one is looking is often found. In any case, the town cistern often becomes a sort of public dumping ground. Earrings and finger-rings slip off into the cistern and no effort is made to recover them.

So the periods of occupation and destruction succeed one another and the hill grows in height and extent.

Scientific excavation consists of dissecting the mound in inverse order, peeling off these layers one by one, carefully noting every detail of building construction, every scrap of pottery. Every clue that will serve to establish the identity of the period is recorded. All the fragments of pottery are saved and it is the special job of one man to piece these together so that the shape of the vessels can be recovered. And so the uncovering of past civilizations is a jig-saw puzzle on a gigantic scale.

A Clean-up Campaign That Was Different

Kansas City, Mo., Decides Not Only to Clean Up But to Stay Clean—City Service Bureau Organized

By Paul Thieman

THE so-called "spring clean-up" in Kansas City until this year was one of those venerable town jokes. It was too aged to laugh at. And so it was seriously staged in the newspapers each year as a sort of modern rite demanded by a certain type of mind—the type which confuses publicity and action. If it's printed, they think it's done.

To be sure, much trash was burned or dumped, and fresh paint applied in these "clean-ups." But the junk-strewn, tin-can decorated vacant lots; the lop-sided shacks and drunken-looking abandoned buildings; the broken-down sidewalks and curbs and hodge-podge repaired street crossings; the sunken pavevents; the maudlin signboards; in fact, all the familiar nuisances and eyesores remained on the job of uglifying the older parts of the city.

Many householders could and did make their premises look big-city-like. But what of the disrepair of pavements and sidewalks and the persistency of eyesores? For, according to custom, these were treated as not visible to the inspecting staff at the City Hall.

Complainants were regarded as busybodies or cranks and gently passed from department to department. They were reminded that owners of property not living in Kansas City couldn't be arrested, could they? And according to the courts, sales agents were not responsible for vacant lots used as dumps. Besides, it made enemies to stir up these matters. Anyway, the lawyers would grab the cases and hang them up in the courts indefinitely. Finally, it was illegal and unconstitutional to invade private property even to abate a nuisance.

But this year Kansas City had installed city manager government. The man of the hour was Judge H. F. McElroy, a successful real estate man, who had shown will-power as County Commissioner. Judge McElroy is a Democrat, but he sent for a Republican, Major Charles Edwards, a Rooseveltian character whose record as former Chief of Police, and soldier in two wars, had made him Chairman of the Committee of Public Safety of the Chamber of Commerce.

A meeting was called. Representatives of all types of civic organizations met and organized, and drafted Judge McElroy himself as general chairman; Major Edwards was appointed campaign director; J. Burr Taylor, head of the Fire Waste Council, became secretary, and Ray W. Wilson, Civic Secretary of the Chamber of Commerce, became associate secretary. These volunteers, together with Cornelius Roach, a bank president, acting as treasurer, were the executive committee of the Clean Up and Stay Clean campaign.

Major Edwards announced that this year's clean-up would be different. There would be a *survey* of all buildings and streets by the police and fire departments and the city inspectors. To make sure of the work's being done, consecutively numbered inspection cards would be issued, these to be returned to the committee for the follow-up or *stay-clean* work by the city itself.

"This is a campaign for permanent results," said Major Edwards, "and we must, first of all, know where and how many unsanitary, hazardous, or careless, slovenly conditions exist."

While the usual disposition of rubbish was going on, the inspection cards poured in. The police in two weeks returned cards containing between 10,000 and 15,000 complaints. Many cards listed from three to six different offenses. The Fire Department reported 1,494 fire hazards, and city inspectors, members of the committee, and citizens using the phone at headquarters were responsible for the rest.

Rejecting duplicates and trifling or cattish complaints, the committee had an itemized survey of not less than 15,000 items, including encroachments upon sidewalks; bad sidewalks; dangerous and unsanitary buildings; all sorts of fire hazards; eyesores of every description; bad odors; dirty premises; inefficient sewers; clogged alleys; holes in the streets; unsightly barricades; awful vacant lots; offensive billboards; ugly signs; sagging wires; ugly parking stations.

The volunteer executive committee served two weeks, then it waited on the City Manager and placed on his desk all of this stacked information. Judge McElroy accepted the cards, saying that they were one of the most valuable and useful pieces of equipment of his office. But a way to use this equipment would have to be worked out.

Major Edwards replied that the committee could see only one disposition of the 15,000 complaints. It was the creation of a city complaint bureau, or desk, in the City Manager's outer office, to receive and classify not only the 15,000 complaints, but all others and transmit duplicates to the proper departments, retaining the original as the record. "What about complaint No. 11,272 sent to your office last Monday?" the complaint man would ask. There could be no escape from the record.

The immediate result is a brass-railed space in the large outer room of the City Manager's office, where an experienced woman city employee is always on hand, not only to receive complaints, but to direct people where to go. The name of the new department, established by ordinance on June 28, is:

THE CITY SERVICE BUREAU

The Bureau functions while its superintendent, L. R. Toliver, is away from his desk, following up the disposition of the great stacks of inspection cards. Not only is the Bureau expected to take up matters falling between the lines of the departments, but, in the end, its investigations may develop into research.

Moreover, it will disclose to the City Manager which departments and what men are enthusiastic in serving the city and the public, and which are halting and lukewarm. By their works he will know them.

CITY-WIDE CLEAN-UP CAMPAIGN

KANSAS CITY, MO.
May 15th to 29th, 1926

No. 5

H. F. McElroy, General Chairman
Capt. Charles Edwards, Campaign Director
Campaign Headquarters—Fourth Floor City Hall

INSPECTION REPORT DISTRICT NUMBER.....

Location (Street and Number).....

.....

Occupied by .....

Kind of Business.....

(Inspector will check the nature of property and defective conditions observed)

Property—Building..... Dwelling..... Shed or Outbuilding..... Areaway..... Fences..... Sidewalks..... Street..... Alley..... Vacant Lot.....

Conditions (External)—Unsightly..... Dilapidated..... Littered with Trash..... Rubbish Piles..... Garbage..... Fallen Trees or Brush..... Other Debris..... Hanging Signs (broken or unsafe)..... Hanging Wires..... Unsightly or Torn Awnings..... Canopies..... Screens..... Trash Burning..... Signs or Billboards in Bad Condition.....

Filthy and Unsanitary—Stagnant Pools..... Outhouses..... Stables..... Mosquito Breeders..... Refuse or Garbage Dumped..... Weeds.....

Streets and Alleys—Broken Paving..... Holes..... Need of Repair..... Open Trench..... Manholes..... Catch Basins..... Broken..... or Blocked..... Rubbish in Gutters.....

Sidewalks—Broken or in Need of Repair—Covered with Dirt..... Obstructed..... How?.....

Conditions (Interior)—Rubbish or Trash..... Where Found..... Ashes..... Where Found..... Broken Boxes or Other Inflammables..... Where Found.....

Other Fire Hazards—Specify Below.

Remarks (report any conditions not checked above).....

.....

.....

.....

.....

Date..... Signed.....
Inspector.

INSPECTION REPORT FORM, PREPARED BY CHAIRMAN OF FIRE WASTE COUNCIL, KANSAS CITY

NOTE.—Major Edwards is referred to on the inspection report card as Capt. Edwards. He was at one time a police captain and is still familiarly so called. He was a major in the World War and is a lieutenant-colonel in the Reserve Corps.

LONG BEACH WOMEN IN INCINERATOR SUITS

Not a new style in bathing costumes, but a legal action to prevent Long Beach, N. Y., from operating its new garbage incinerator plant, is the subject of an item in *The New York Times* for July 21, the heading of which is reproduced above. It is claimed that proper enforcement of the zoning regulations would prevent operation of the incinerator in the district in which it was built.

Department of Public Safety Analyzes Automobile Accident Causes

By James Sinke
Director of Public Safety, Grand Rapids, Mich.

FROM the automobile accident records of 1925, as collected by the Traffic Division of our city, a careful analysis has been made which is now available in a 40-page illustrated booklet entitled "Think." Twenty-five thousand of these booklets have been distributed to the motorists of Grand Rapids as a means of acquainting them with the causes of automobile accidents on our city streets.

It is felt that education is needed upon this subject, and the city of Grand Rapids has spent the necessary money to collect this information and put it out in booklet form. Such data can be quite generally applied to any city, and as we desire to contribute our mite to the national safety movement, we shall be glad to send a copy of the booklet "Think" to anyone interested, on application.

Among other features of the booklet which may interest officials in charge of traffic who have not yet tabulated accident reports in graphic form, are a series of studies and charts classified as follows:

I. Accident Records
II. Where Accidents Occurred
III. Type of Accident
IV. When Accidents Occurred
V. Type of Vehicle
VI. Physical Conditions
VII. Reason Driver Had Accident
VIII. Accidents Between Autos and Street Cars
IX. Pedestrian Accidents
X. Effect of Age on Accidents
XI. The Effect of Accidents

Believing that the conclusions as published in the pamphlet will be of general interest, we quote them here.

Conclusion

We have shown the cause and effect of automobile accidents from actual experience of a study of assembled facts. Let us draw some definite conclusions:

I. Accident Records

Every accident should be investigated and analyzed.
Investigation permits the placing of individual responsibility.
Analysis furnishes the only sound basis for applying intelligent preventive measures.

II. Where Accidents Occurred

Accidents are most frequent where congestion is greatest.
Traffic interference is greatest at street intersections.
Every street intersection is a danger point.
The numerous street intersections in the city increase the hazard compared with country highways.
Lack of control and failure to give right of way caused most of the collisions at street intersections.

III. Type of Accident

Eighty-seven per cent of all accidents were property damage cases in which the motorist paid dearly for his own carelessness or the carelessness of another motorist.
Pedestrians were the greatest sufferers by death or injury.

IV. **When Accidents Occurred**

Accidents were most frequent during the hours of greatest traffic movement and when congestion was greatest.

V. **Type of Vehicle**

Private passenger cars, being more numerous, figured in most of the accidents.

VI. **Physical Conditions**

Most accidents occurred upon dry-surface roadways, in clear weather, and during daylight.

Congestion is a greater hazard than poor physical conditions.

Slippery streets, rain or snow, darkness and fatigue, multiply the accident hazard.

More alertness and less speed will reduce accidents.

VII. **Reason Driver Had Accident**

Collisions by motorists are mostly due to violations of traffic regulations.

Most auto collisions result from willing acts of careless persons.

Carelessness is the child of ignorance and the result of indifference to traffic regulations.

Excessve speed is a predominating cause for collision by automobiles.

Excessive speed is an indefinite factor determined by the ability to stop an automobile before colliding with another object.

Cross-traffic and between-intersection congestion limits miles of travel per hour regardless of attempted speed.

Many collisions are due to defective brakes.

VIII. **Accidents Between Autos and Street Cars**

Collisions between automobiles and street cars are mostly due to between-intersection interference.

IX. **Pedestrian Accidents**

Most pedestrian accidents are caused by failure to cross streets at intersections and to lack of watchfulness.

Children represent more than half of all pedestrian accidents.

Pedestrians are guilty of contributory negligence in many pedestrian accident cases.

X. **Effect of Age on Accidents**

The carelessness of youth and the infirmities of age are a large contributing factor in accidents.

XI. **The Effect of Accidents**

Death, injury and damage cases reflect discredit upon an enlightened and self-respecting community, and the price paid is far in excess of justifiable circumstances.

What Are We Going to Do About It?

Two courses of action stand out as necessary—education, and law enforcement.

Education

Education is the fundamental of progress. This treatise on traffic accidents lays a foundation for education upon correct principles for progress in automobile accident prevention.

Education should not be confined to any one organization, but as a civic duty every organized group and every individual should understand the principles of safe driving and by example induce others to learn and practice caution.

Motorists must train themselves in proper driving habits.

Parents should teach their children the dangers of the street and as pedestrians set an example worthy of a loving parent and a helpful citizen.

A more general knowledge of, and respect for, traffic laws must be encouraged. These laws are a code of conduct for the driver of an automobile, who receives as a privilege, and not as a right, permission from the state to drive a dangerous vehicle upon the public streets only so long as he abides by the "rules of conduct" under which this privilege is granted.

Law Enforcement

Law enforcement is delegated to certain individuals and agencies to protect society from injury by the unscrupulous, the vicious, and the lawless.

Lack of law enforcement cannot be entirely blamed upon the police. Cooperation of the courts and citizen juries are necessary, and they are influenced by public opinion. To the extent that society has fear of the person who commits offense against it depends the degree of enforcement demanded.

The attitude of the individual towards law observance is a predominating influence upon accident frequency.

The careless and reckless motorist must accept the responsibility for nearly every collision.

Penalties for traffic-law violations should be more severe.

A united public demand for punishment of traffic ordinance violators will bring correction of the abuses.

Street Accidents to Children Increase During Vacation Period

An analysis of the record of fatalities and accidents to children in Grand Rapids shows that the figures are higher during the vacation period than during the school term.

During the year 1925 nine children under 15 years were killed. Five were killed during the months of June, July, and August, which is the vacation period. Four were killed during the other nine months of the year. One hundred and ninety-four children were injured. Sixty-one were injured during June, July, and August, 133 were injured during the other nine months.

We receive many requests from parents and from Parent-Teachers Associations for protec-

COMPARATIVE TABLE BY AGE GROUPS SHOWING RATIO OF PERSONS KILLED & INJURED TO TOTAL POPULATION OF CITY 1925

AGE GROUP	PERSONS IN AGE GROUP	NUMBER INJURED	NUMBER KILLED	RATIO OF KILLED & INJURED TO AGE GROUP	GRAPHIC SCALE SHOWING RELATIVE PERCENTAGE OF KILLED & INJURED IN EACH AGE GROUP
0 - 4	18298	52	2	1 TO 291	
5 - 9	15215	108	6	1 TO 133	
10 - 14	13848	72	1	1 TO 185	
15 - 19	13313	57	7	1 TO 202	
20 - 24	14298	56	4	1 TO 242	
25 - 29	15440	36	0	1 TO 429	
30 - 34	13869	48	0	1 TO 295	
35 - 39	12422	45	3	1 TO 264	
40 - 44	10640	28	1	1 TO 367	
45 - 49	9411	27	0	1 TO 349	
50 - 54	8084	28	1	1 TO 290	
55 - 59	6427	23	1	1 TO 268	
60 - 64	5414	21	0	1 TO 258	
65 - 69	3859	8	1	1 TO 407	
70 - 74	2399	20	5	1 TO 92	
75 OVER	2639	7	3	1 TO 293	
NOT STATED	185	125	0		
TOTAL	183738	757	35	AVERAGE 1 TO 209	

INJURED
KILLED

As shown by this chart, the age groups in Grand Rapids suffering the largest percentage of accidents are children of kindergarten and school age, and persons of from 70 to 74 years of age. The high percentage of accidents to children is a strong argument for additional playgrounds to keep children off the streets

tion around the schools during the school term. We know that this same condition exists in many other cities and that some cities use many special patrolmen for this work around schools. We have avoided these special details of officers on the theory that school corners are not the danger point for children, and our school authorities are in accord with this theory.

The child is easily trained in the formation of correct habits of carefulness. This teaching is now a part of the school program. In fact, we believe that Grand Rapids ranks among the most progressive cities in this line of work. We are also calling the attention of parents to the fact that if they will amplify this teaching by example and repetition, there is little doubt that many young lives will be saved.

Increasing Use of Electric Traffic Signals in Grand Rapids

We have been using a synchronized automatically controlled signal system on our principal streets for the past three years, Grand Rapids being one of the pioneer cities in the use of these devices.

We have recently installed several individual units in the outlying sections of the city, and we contemplate installing several more in a very short time. By the end of this summer, we shall have approximately forty center-of-the-street suspended lamps in use. It is my personal ambition to control all intersections in the central business portion of the city with a unified or synchronized system.

The question is frequently raised as to the effect of traffic lights on the volume of traffic. We have checked traffic flow through intersections, both with and without the use of signal lamps, and find that the volume of traffic that will get through the intersection without the use of the signal is approximately equal to that which can get through with the signal. I do not believe that the signal light materially affects the volume of traffic that can flow through an intersection in a given length of time, but I am certain that with the use of the signal lamp an equal amount of traffic can be handled with much more safety and much less confusion, and to the far greater satisfaction of the motorist, than it can be handled without this regulation.

What Large Cities Think of Tourist Camps

In an effort to obtain a consensus of opinion regarding the attitude of chambers of commerce in large cities toward tourist camps, the Minneapolis Civic and Commerce Association recently sent a questionnaire to a small list of such organizations. Nineteen replies received up to July 9 disclose the following results:

Sixteen cities regard the tourist camp as an essential inducement to the desirable touring public; two cities regard camps as necessary to the tourist, but not necessarily an inducement to desirable visitors; and one city stated that the better type of tourists prefer to go to hotels.

Eleven of the nineteen cities maintain municipally owned and controlled tourist camps.

Of fifteen cities reporting on rates charged for camping space, two give free space. Most of the others charge from 25c to 50c per day, the latter being the most common rate. In one case a charge as high as $5 a day is made for space accommodations. Further details regarding the result of this questionnaire can be secured from the Minneapolis Civic and Commerce Association.

What Florida Can Teach and Learn

A Symposium on City Planning, Municipal Improvements and Real Estate Subdivisions

(*Continued from the June issue*)

From S. R. DeBoer

Landscape Architect; City Planner, Denver

The most important lesson that other cities can learn from the developments in Florida is the one of the danger of over-development, and its accompanying danger of platting without comprehensive study. In a time of rapid growth such as Florida's cities have experienced, with real estate values multiplying continuously, a fever takes hold of a community that makes careful study nearly impossible.

Many subdivisions are platted without relation to each other and without even the carefully studied connection they should have with the mother city. It seems likely that Florida communities will pay heavily for readjustment of this type of platting. For the steady growth which must and will follow the "boom" period — a growth when competition between cities may become keen—these cities will have to open up miles of ocean frontage, correct downtown traffic conditions, create parks and playgrounds, and make all the expensive alterations that our older cities are making.

The greatest lesson to me, however, is the danger of over-development—I may say overproduction. Supply and demand will regulate this in its natural course, but will it do it without impairing seriously the growth of the state?

The answer to your second question is embodied in the first. Florida cities, as all cities, need comprehensive plans that extend far into the suburban districts. These plans should be outlined in main lines only, not in detail, and all cities of a district should work together on a master plan for the whole district.

In such a master plan I would outline not only main arteries of traffic, but also proposed park areas, open squares, and the use to which various sections can be put. Local business centers should be carefully indicated.

Radical though it may seem, I would add to this a provision for much more drastic control of lot subdivisions. Under our present laws effective control may not be possible, but where a whole state may suffer might not such legislation be considered to such extent as it can be upheld by the courts?

Answers to Two Questions

As previously announced, the holding in Florida of the National Conference on City Planning resulted in the suggestion that The American City could render an important service to the municipalities of Florida, and to other rapidly growing communities throughout the United States, by publishing a symposium in which city planners who had recently visited Florida would answer these two questions:

1. What is the most important lesson which municipal officials, city planners, or realtors in other states can learn from the development of the last two years in Florida?

2. What is the most valuable suggestion which you can offer to the leaders in municipal and civic affairs in Florida as a result of what you have observed and learned on your recent trip?

Seven answers to these questions appeared in the June number. Three others are here published.

From Frank A. Bourne

Architect, Boston, Mass.

Florida has much to say in the way of water-front development. A coast line that stretches from Jacksonville through many ocean beaches —Miami, St. Petersburg, Key West—to the less-known Gulf region west of Tallahassee offers an opportunity for water-front developments sufficient for many years to come. Florida's water-front, including the lakes of its mountain fastnesses, stretched out would more than reach New England.

But, as one could visit many of our seaport cities in other states without realizing that he is on the water-front, so it often is in Florida. It so happens that I spent three days in St. Petersburg without seeing a bathing-beach, but at Miami Beach, after paying a dollar to be admitted to the intricacies of a bath-house, I did enjoy a swim in the warm surf. It is a great surprise to many visitors to Florida to find how few and far between are the well-known beaches.

Such an opportunity is open for magnificent architectural water-fronts! Legally, there are difficult questions of riparian rights, but, practically, to one familiar with rockbound coasts, how easy it seems to stake out a pier or yacht basin, pump a little sand from under water to

fill a bayou a few feet deep, and lo! plans that heretofore have been seen only on paper begin to appear life-size. They may lack depth and height, but to walk and ride and seaplane on, to subdivide and sell, they are unequaled. Like magic, the face of nature in Florida is being washed, powdered, made more smiling and rouged to an extent never before dreamed possible. "Forty Miles of Water-Front," the Coral Gables' sign-boards announced. But in buying land it must be remembered that "water-front" does not necessarily mean ocean or lake front. Much of Coral Gables' water-front is being developed along the canal which it is creating.

One trouble that I found in Florida was that it needs more refuse cans—big ones and many. You back into a city—that seems to be the polite way for a train to enter in the South—and the amount of thrown-around rubbish, unkempt vacant lots and left-over scaffolding that sometimes greets the eye is appalling.

Is good city housekeeping civic art? I think it is. Increased attention to this element of public duty would add greatly to the attractiveness of this state which is offering to its inhabitants and visitors homes and playgrounds within so short a distance of the water and is providing so well for the architectural development of its water-fronts.

From M. W. Weir
With Charles Wellford Leavitt & Son, New York

There has been demonstrated in Florida, during the past two years, an example of mob psychology unequaled by any other real estate boom in this country.

The high state of efficiency which advertising methods have attained is probably to be credited with that result.

Whatever the cause may have been is perhaps beside the question. The resulting conditions and the lessons to be learned are the important matters. The first of these is the fact that, when the boom began, most of the cities should have known that the plan on which they were built was inadequate. This is not an unusual condition, for nearly every city in the country has grown up on an inadequate plan.

The tremendous speculation which real estate booming brings on, is a feature which should be brought under control; for it blinds the vision of the administration and later brings on a reaction which atrophies progress and more often than not kills the orderly, steady growth which a city should have. Speculation prevents good planning, because it travels like a blight and its result is sudden and devastating.

Speculation on a large scale such as has been witnessed in Florida brings with it so many undesirable features that it seems that the big problem in city planning and city administration is to control speculation and prevent its devastating work.

Speculation creates no new wealth, though it may seem to do so at the time of booming prices, for, obviously, if the value was there to begin with, it will stay there and grow with the orderly and reasonable development of the city, but speculation does create an inflation and a handicap which a city must carry.

There seem to be two outstanding lessons to be learned from Florida's development: (1) that speculation should be controlled by taxation or some better method; (2) that there should be a control over the development of property, at least in the location of main arteries of traffic and principal highways, by regional planning made efficacious by the necessary legislation.

Many Street Maples Being Destroyed by Wilt

BECAUSE of the recent spread of the destructive wilt of maples in various parts of the country, it is thought advisable in future planting, in limited localities where the wilt is prevalent, to substitute other kinds of trees for maples, says the United States Department of Agriculture.

Maple wilt, which was first reported in the United States eleven years ago, is now known in spots in the region extending from North Carolina and Tennessee to Canada and westward to Wisconsin. This disease has been noted principally upon Norway and sugar maples, according to Department Circular 382-C, "Maple Wilt."

The fungus, which frequently gains entrance to healthy trees through wounds, can be carried from tree to tree by insects and by pruning tools, though there are various other ways for its spread. The rate of spread of the wilt varies greatly.

The disease has been found principally upon street trees, but in several different states it has been observed in nurseries, and in three places it has been discovered in native forest growth of maples near towns or cities. The suggested treatment consists of sanitary measures, such as cutting out and burning infected parts and the protection of wounds.

A copy of the new publication may be obtained free, as long as the supply lasts, by writing to the U. S. Department of Agriculture, Washington.

Forward Steps

Reported by Municipal Officials, Chamber of Commerce Executives and Others

Macon's Civic Renaissance

MACON, GA.—A civic improvement program of several years' duration has brought many changes to Macon.

The first of these improvements came several years ago, when the railroad companies operating into Macon—there are five of them with nine lines—decided to eliminate their several stations and to erect one central terminal of magnificent proportions, two blocks from the heart of the business section. The building cost $1,500,000, is modern in every way, and compares favorably with those in many cities much larger than this community of 70,000 persons.

Last year a $100,000 concrete athletic stadium was erected by the city for the use of local athletic teams and for those of Mercer University, on whose campus the stadium was erected.

Macon is divided by the waters of the Ocmulgee, two bridges connecting the two sections. The larger of these spans was replaced during the early part of the present year by a beautiful concrete structure, and it is probable that a similar bridge will occupy the site of the second steel span.

What is said to be the finest auditorium in the Southeast was opened in Macon last November. This auditorium has three halls seating respectively 4,000, 600, and 350, with an art room and several committee rooms. It provides a place for meetings and municipal events, and its copper-covered dome, measuring 142 feet 6 inches in diameter, is said to be the largest in the world. The building is valued at $1,250,000.

Another magnificent structure was added to Macon's skyline when the new modern Court-House was erected at a cost of $600,000.

The last year has also seen the laying of much additional street paving, and sanitary sewer lines have been added, larger mains have been installed for the local water-works and a new reservoir serving one section of the city will soon be in use.

The city's civic program is not only benefiting the entire citizenship, but is proving to be an important factor in the growth of the city.

During the last six months of 1925 new firms and manufactories located in Macon added more

NEW MUNICIPAL AUDITORIUM, MACON, GA.
The copper-covered dome is 142 feet 6 inches in diameter. The building contains three convention halls, seating 4,000, 600, and 350, respectively

OLD STEEL BRIDGE IN MACON BEING REMOVED AFTER COMPLETION OF NEW SPAN
The old bridge was raised several feet for the new construction. Pedestrian traffic was not interrupted

than $100,000 to the annual payrolls of the city. Truly, the Heart of Georgia has benefited by the great movement of decentralization which is now going on throughout the United States. Present prospects are that several other new factories will be opened in Macon during the present year.

Building is going on at a rapid rate. Approximate estimates of construction programs now in progress and soon to begin, which will continue over an indefinite period, total over $3,650,000.

Indications point to a marked enhancement in all realty holdings. One of the large subdivision developers recently remarked that prices on his home-site holdings would probably be advanced 25 per cent in the near future. This means an active advance in city property as well.

WILTON E. COBB,
Secretary, Macon Chamber of Commerce.

Indiana Puts City Planning Primer in Public Schools

EVANSVILLE, IND.—The importance of city planning education in the public schools as a means toward carrying out city planning projects is being recognized throughout the state of Indiana. About a year ago a leaflet entitled "A City Planning Primer"* was prepared for the Indiana City Planning Association by Prof. G. E. Lommel of

TYPICAL VIEW IN RESIDENCE SECTION OF MACON

Purdue University and Prof. Frank G. Bates of Indiana University, for use in this way. The Primer is a small leaflet of about fifty pages, taking up the important elements of city planning one after another in simple, interesting language, and is well illustrated with photographs and maps which show conditions in Indiana cities.

Evansville, through the initiative of the City Plan Commission, commenced at once to use copies of the Primer in the public schools. One hundred copies were obtained by the Commission to start with, and all but a few of these were given at once to the Superintendent of Schools. It is expected that this relatively small number of copies will demonstrate the value of providing the schools with many more of them. Copies have been distributed through the eighth grades and the high schools, in each of which a civics class has had the use of several of the Primers throughout the school year just past.

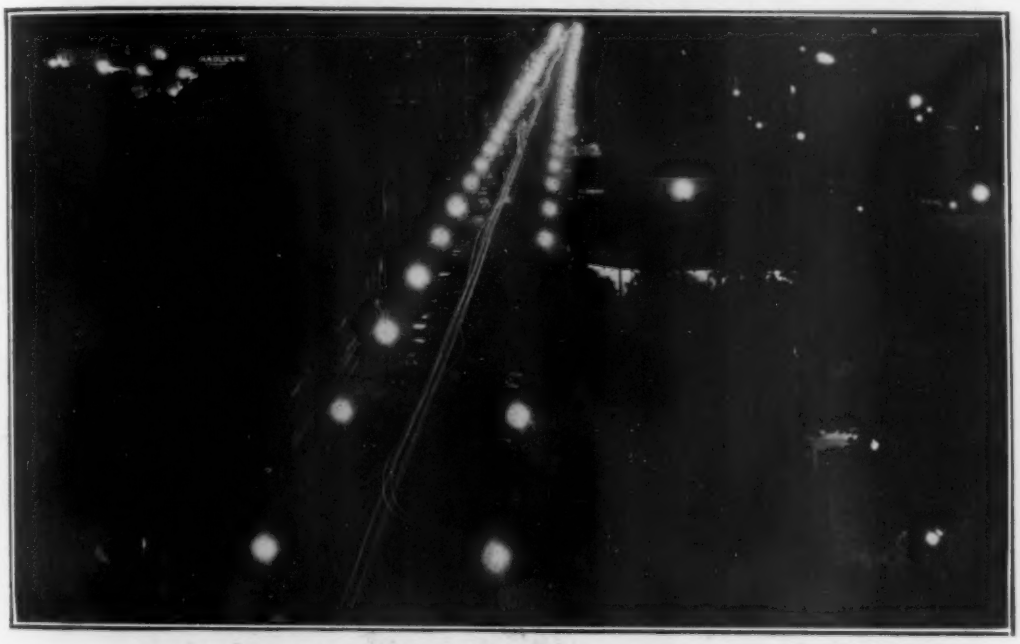
In addition to this Primer, the City Plan Commission has furnished also copies of its first city planning publication, "A System of Major Streets for Evansville," a few large-sized wall maps showing the major street plan—which is the basis of the whole city plan—and copies of the zoning district maps. Definite information of this sort concerning the local city plan has been especially welcome to the civics teachers, as it gives them a much better opportunity to explain to the pupils just what the city plan of their own city expects to accomplish.

Copies of the "City Planning Primer," the Major Streets pamphlets, and the zoning maps were also given to the public libraries, to Evansville College library, and to the Catholic High School, in furtherance of the idea of spreading the message of better cities through city planning.

R. W. BLANCHARD,
Executive Secretary, City Plan Commission.

Moline's Recent Advance in Street Lighting

MOLINE, ILL.—Through the cooperation of the local Chamber of Commerce, a white-way lighting system has been put into operation on the main business streets of Moline. The equipment is of the highest order, and places Moline in the front rank of efficiently lighted cities. The local merchants, keenly alive to the benefits to be derived from such an improvement, were eager for the installation of a white-way system, and favorable comments have been received from many sources since the lights went into operation.



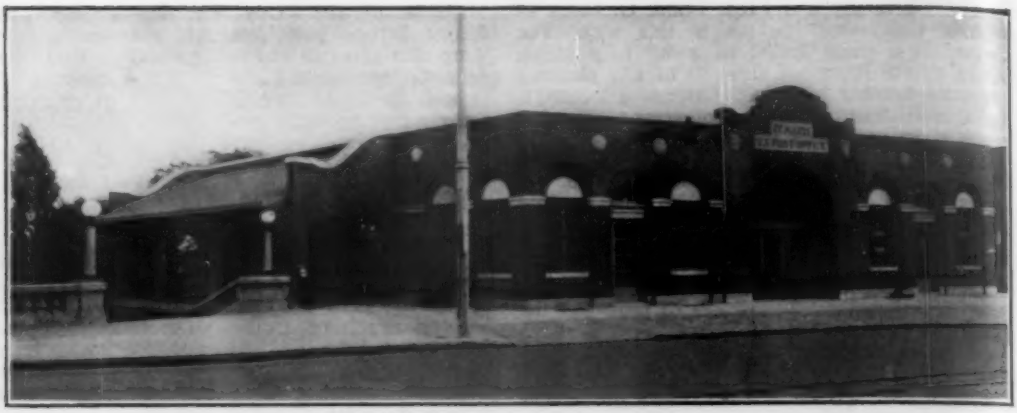
PARTIAL VIEW OF WHITE-WAY SYSTEM ON FIFTH AVENUE, MOLINE, ILL.

The standards adopted are of handsome design, 15½ feet to the light centers in height, equipped with 1,000-candlepower lamps, and with rippled glass globes which diffuse the light and at the same time render invisible the light filament of the lamp. There are 206 lights in the system, all of which burn until midnight and half the number from that time until morning. The posts are opposite each other on the two sides of the thoroughfare, eighty feet apart, with a light on each of the four corners of the intersections. The transformers are so designed that 1,500-candlepower lamps can be installed over night, if desired.

The illustration accompanying this article gives a partial view of the white way on Fifth Avenue.

C. V. GOULD,
Secretary, Moline Chamber of Commerce.

* EDITORIAL NOTE.—This Primer was listed in THE AMERICAN CITY's department of Municipal and Civic Publications in the issue of November, 1925 (page 573). It contains much material of value to municipalities everywhere, but has particular reference, of course, to conditions and legislation in Indiana. There will soon be available a City Planning Primer of more general application, which is being prepared for the Division of Building and Housing of the U. S. Department of Commerce by an Advisory Committee on City Planning and Zoning.



THE FIRST COMMUNITY-OWNED POST OFFICE IN THE UNITED STATES
Built in St. Marys, Ohio, by popular subscription, and equipped and rented by Uncle Sam

Community-owned Post Office in Civic Center Surrounding Memorial Park

ST. MARYS, OHIO.—At the close of the World War, a committee of citizens in the city of St. Marys which had been organized to promote community spirit and cooperation during the war, found itself out of a job and with more than $6,000 on hand. At a meeting of the committee immediately following the signing of the Armistice, it was decided to keep the committee intact and to carry on community work and operate as a civic organization.

This organization was then incorporated as the Community Welfare Association. The idea foremost in its plans was to erect a memorial to the soldiers. A survey was taken to find the best place for a memorial and to determine its nature.

The old Miami and Erie Canal passes through the heart of the city. A dilapidated wharf, warehouses, lodging-houses, and livery barns, were located along this waterway, in an area about the size of a city block. As the canal had been abandoned for transportation, all business connected with it had been either suspended or moved, and this property was being used as a public dump and was a continual eyesore. The Association's plan here served a double purpose. The idea was conceived by the organization of securing this land, razing the buildings, and building a beautiful park which would be dedicated to the memory of war veterans. A campaign for funds was conducted. The balance of the war-chest fund was turned over to the Association, and $60,000 additional was subscribed. The park was built, and is called Memorial Park. It has been

ABOVE—
The site upon which Memorial Park was built, as it appeared in 1919

RIGHT—
The fountain in the heart of Memorial Park, St. Marys, Ohio

maintained for several years at a cost of $1,500 per year, which has been raised by donations.

The civic center of the city is now established around this park. All property in that section is being improved and beautified. All civic construction and development is being carried out in and around the park. The Library and Community Hall are housed in a building in one corner of the park, and the Chamber of Commerce in a building overlooking the park. The new high school, which has just been completed, stands across the street from the park, and a proposition is now being considered to build a new city hall and municipal building on a site opposite the park. The site of the new armory, which has just been completed and which faces the park, was donated by the Association.

About a year ago, when it was realized by the citizens that they must have a larger Post Office, and it was learned that the Government could not grant the city the necessary funds for a Federal Building, the Community Welfare Association, in conjunction with the Chamber of Commerce, conceived the idea of building the Post Office and renting it to Uncle Sam. A campaign was launched for funds, and $36,000 was secured. A building was erected according to the plans and specifications of the Post Office Department, and a contract was made with the Department to rent the building for a period of ten years. The Government agreed to equip it with first-class Post Office equipment. This new building stands on a corner of Memorial Park. St. Marys now has the distinction of having the first community-owned Post Office in the United States, and it will be an example of what may be done by other cities that are in need of additional postal facilities but cannot expect assistance from the Government. Hundreds of cities have already asked for the plans of this new experiment. The rent from this building amounts to $3,500 per year; this maintains not only the building, but also the park, which had been maintained by popular subscription.

All of this development has been made possible by the foresight and contributions of the city's public-spirited citizens, and has established an important precedent in civic development.

ROBERT F. KASER,
Secretary-Manager, Chamber of Commerce.

Another County Park Commission for New Jersey

PATERSON, N. J.—Upon the petition of citizens who included officers of the Passaic County Planning Association and the Paterson and Passaic Chambers of Commerce, Supreme Court Justice Charles C. Black appointed on July 3 a preliminary park commission for Passaic County, N. J.

The appointees are: Robert D. Benson, of Passaic, President of the Passaic County Planning Association, former Chairman of the Board of the Tidewater Oil Company, of New York, and father of the Passaic city park system; Henry V. R. Scheel, of Clifton, Vice-President of the Botany Worsted Mills; Garret A. Hobart, Jr., of Paterson, son of the late Vice-President of the United States; Louis V. Hinchliffe, of Paterson, former Park Commissioner of Paterson and President of the Labor Cooperative National Bank of Paterson, and Miss Florence Halsey, of Hawthorne, former President of the New Jersey League of Women Voters and Chairman of the New Jersey branch of the League for Peace and Freedom.

The preliminary park commission was named in accordance with the New Jersey state law of 1894. The five commissioners serve without compensation for two years and are empowered to expend up to $10,000 in making a survey and laying out a plan for a county park system. Upon the submission of their report to the Supreme Court, the question of the appointment of a permanent commission with authority to use funds raised by a $2,500,000 bond issue is to be voted upon at a referendum election. The permanent board also serves without salary.

The naming of the commission at the time is of interest because of the rapid development of the county, which is expected to be accelerated in the near future with the completion of the Holland vehicular tunnel under the Hudson River and the Fort Lee bridge over the river connecting New York and New Jersey. The Passaic County Planning Association, which is organized "to disseminate information relative to municipal and regional planning and to promote interest in the orderly development of our region," took the initiative in the movement and obtained the cooperation incident to the presentation of the petition to the Supreme Court.

C. A. WINANS,
Executive Secretary, Passaic County Planning Association.

Public and Commercial Recreational Facilities Mapped by University and City Club

CHICAGO, ILL.—The recreational facilities of Chicago have been studied, classified, indexed, and mapped by the University of Chicago, acting for the City Club of Chicago. Some significant facts have been revealed through this survey of the governmental, commercial, and privately supported institutions and activities of the nation's second city, now having more than 3,000,000 inhabitants. Local recreational experts believe that the huge map, made in two sections each 10 feet square, to record all units of recreation, is the most complete of its kind ever prepared. The only facilities not indicated on the map, by distinctive markings, are those confined purely to the home. A slipper has been used to represent a dance hall, a book denotes a library, and a picture of a baseball appears on the huge chart to locate a place where the game is played.

Surprising trends in the nature of recreations, popular fifteen years ago and now, are revealed by the survey. Fifteen years ago there were in Chicago twice as many dance halls and motion pictures as there are to-day, it was discovered, hundreds of small places having been supplanted by "wonder theaters and imposing dance palaces."

Dr. Ernest W. Burgess, Associate Professor of Sociology at the University of Chicago, in presenting the map to the City Club before a meeting of the city's recreational leaders and some members of the Recreation Commission which was recently appointed by Mayor William E. Dever, explained some of the discoveries of the survey:

"Action of our County Commissioners in developing a great system of forest preserves, and of the state of Indiana in creating a dunes park,

promises well for similar provisions for wholesome recreation in the Greater Chicago area.

"Through the radio, family recreation has been revived on a scale beyond the hopes of even the most ardent advocates of the return to the home fireside. The radio has brought the whole world of news and knowledge, speech and song within the four walls of the home.

"The most telling conclusion to be drawn from the map is that, since the war, development of public and privately owned recreation has not kept pace with growth of commercial recreation."

Newly discovered data showing the extent of recreation facilities of Chicago revealed that, with 1,098 places, there are more billiard-halls in the city than any other recreational agency. Boys' clubs, including Scout troops, were next in number, with 463; motion picture theaters were listed third, with 381; dance halls were fourth, with 254 places. The total number of commercial recreation places was found to be 2,020, and the number of privately supported places was learned to be 881. There are 263 municipal and other publicly supported places, such as swimming pools, parks and playgrounds, indicated in purple symbols on the huge map. The grand total came to 3,164 places of recreation in Chicago, exclusive of the private homes.

A total of 171,000,000 persons in a year attended the recreation places operated as business enterprises, the motion-picture shows attracting 120,000,000, billiard-rooms and bowling-alleys receiving 25,000,000, public dance halls drawing 14,000,000, and theaters and vaudeville shows receiving the remaining 12,000,000.

More than 15,000,000 persons attended affairs at private recreation places that are open to the public but are privately supported. Almost 2,500,000 were served by the Y. M. C. A. recreation program, and 1,500,000 were received by boys' clubs outside of settlements. Band concerts attracted 1,500,000, and the Art Institute of Chicago attendance was given as 973,586. Five million persons attended settlements.

Community centers operated by the Board of Education, parks, playgrounds, libraries, and other facilities that are classified under public recreation, municipally controlled, served about 44,000,000 persons. The parks and small parks received 32,000,000 persons for organized activities.

RHYS G. THACKWELL.

Library Exhibit at Chamber of Commerce a Feature of Civic Education Week

ALBANY, N. Y.—To arouse a deeper interest on the part of the citizens of Albany in their community and their individual responsibility for its development, as well as to educate them in the importance of civic-commercial organization work, the Albany Chamber of Commerce recently arranged a Civic Education Week. This was felt to be one of the most interesting and successful events in which this organization has ever participated.

There was no membership campaign or solicitation of any kind during the Week—just a city-wide revival of civic interest. All the local service clubs, such as Rotary, Kiwanis, Lions, etc., presented special speeches at their luncheon meetings; talks were given before the children of the public schools; and the churches brought the subject of civic education to the attention of their members. The newspapers also played an effective part in the movement.

PORTION OF LIBRARY EXHIBIT OF ALBANY CHAMBER OF COMMERCE AS PART OF CIVIC EDUCATION WEEK

More than 2,000 volumes on civic work were shown by the Albany Public Library

One of the special features of the event was a library exhibit, arranged and conducted by the Albany Public Library under the direction of the City Librarian, Miss Elizabeth M. Smith, and displayed for four weeks at the Chamber of Commerce headquarters. The exhibit constituted a complete business library, transported to the center of business activity for the benefit of those who are interested in the upbuilding of their city and in the work undertaken by the various agencies cooperating in the solution of city problems. The public was invited to visit the library, to study the material, and to borrow books. Two or three members of the city library staff were in constant attendance. This is believed to be the first time that a circulating library operated under the public library system has been conducted in a chamber of commerce office.

The collection of material included some 2,000 books on such subjects as city planning and zoning, recreation, transportation, public safety, public health, and other municipal problems, as well as books on salesmanship, real estate, office management, advertising, accounting, etc. Publications of the local civic organizations, copies of the plans for the development of the Port of Albany, studies of the New York Bureau of Municipal Information on many subjects, periodicals, charts, surveys, and pictures were also on display. The photograph on page 236 shows a small section of the exhibit.

The reaction of the general public to Civic Education Week was very gratifying, and we feel sure that the movement has awakened a new interest in the welfare of Albany and in the remarkable commercial and industrial expansion which this city expects to enjoy during the next few years. There is at the present time approximately $100,000,000 in building and construction work scheduled for this year, including two $4,000,000 hotels, five college buildings, and other large structures, in addition to the work on the port development project which has been under way since April of this year.

ROY S. SMITH,
Executive Manager, Albany Chamber of Commerce.

Light for the Firemen at Work After a Night Fire Is Under Control

COLUMBIA, S. C.—The latest apparatus added to the Fire Department of Columbia is the floodlight shown in the accompanying photograph. This piece of equipment was the idea of the writer and was built by the Department mechanic, M. McCraney, and put into service a few months ago.

The floodlight is taken to fires by our service truck only when a call is sent in to headquarters for it. In its use at the two fires to which it has responded, it has already paid for itself. One of these fires was in a warehouse used by junk dealers. All kinds of old junk were piled up inside this building, and the whole of it was on fire. When the fire had been brought under control, the lights were placed on the inside of the building, and made the place as light as day, so that the men could see very plainly what they were doing.

FLOODLIGHT USED BY COLUMBIA'S FIRE DEPARTMENT IN NIGHT WORK

This new apparatus has added considerable strength to our Department. It is of the trailer type and consists of four 10-inch and two 16-inch floodlights; 1,700 feet of heavy rubber-insulated wire ranging from 50 to 250 feet in length; three reels; and a 110-volt Delco generator with which we generate our own power. The bulbs range from 100 to 500 watts. Six bright lights are easily maintained at one time.

A. McC. MARSH,
Chief, Fire Department.

What Chamber of Commerce Was First to Establish a Broadcasting Studio?

In this magazine last month (page 92) there was published an item from the Chamber of Commerce of the Oranges and Maplewood, N. J., stating that that organization had opened on June 19 what was believed to be the first radio broadcasting studio maintained and operated by a Chamber of Commerce in the United States. New Jersey's priority in this matter has been challenged by Florida, the Fort Lauderdale Chamber of Commerce reporting that its broadcasting station WGBU, the "Voice of Tropical America," was opened on June 1, 1926. From this studio an elaborate program is broadcast each Monday evening and a short program other evenings.

Did any Chamber of Commerce antedate Fort Lauderdale in the broadcasting field?

New Community Hotel, Housing Chamber of Commerce, an Important Civic Force

CAMDEN, N. J.—When our Chamber of Commerce came to the conclusion that it was time to do something big for Camden and decided upon a community hotel as the outstanding need, we took the precaution to satisfy ourselves that there really was such a need.

The Hockenbury System Inc., of Harrisburg, Pa., who were engaged to make a thorough survey to determine the actual hotel requirements of the city, reported the situation and made their recommendations. Following this, 370 enthusiastic business men, headed by J. David Stern and James J. Scott, with the generous gift of $100,000 to the Chamber for investment in the hotel enterprise, coupled with the purchase of $50,000 preferred stock, by Eldridge R. Johnson, President of the Victor Talking Machine Company, as a nucleus, engaged in a Hockenbury-directed financing program, securing $1,250,000 in hotel stock sales to 1,941 citizens.

Designed by H. L. Stevens & Co., the hotel lifted its eight stories into the skyline of Camden. With its two hundred guest rooms and public space furnished in exquisite taste by local connoisseurs, the Walt Whitman, under American Hotels Corporation management, has been a striking success from the start.

The Chamber of Commerce occupies six rooms on the mezzanine floor, and holds its membership meetings in the hotel, there having been a series of eight forum meetings during the past season.

All the service clubs of the city meet there—Rotary, Kiwanis, Lions, A. B. C., Exchange Club, Y's Men, also the Camden Real Estate Board, Camden Suburban Real Estate Brokers, and the Camden Society of Architects. Business houses hold gatherings of their sales forces at the hotel, and social functions are numerous.

THE EXECUTIVE SECRETARY OF THE CAMDEN CHAMBER OF COMMERCE AT HIS DESK IN THE HOTEL WALT WHITMAN

ENTRANCE TO THE CAMDEN CHAMBER OF COMMERCE FROM THE MEZZANINE FLOOR OF THE HOTEL WALT WHITMAN

THE WALT WHITMAN, CAMDEN'S NEW COMMUNITY HOTEL

So great has been the business of the hotel that on June 11 work was started on an addition of two wings of two stories each, with foundations for eight-story structures, providing for further expansion. A whole floor of one of the wings will be devoted to the new Chamber of Commerce headquarters, the popular Coffee Shop will be increased to three times its present size, and five stores will be added to the six now tenanted.

Realty values have been enhanced by the coming of the hotel and many new buildings have been erected. Whereas in former years a convention rarely visited Camden, since the opening of the Walt Whitman twelve conventions have been held, making the hotel their headquarters, and, with the inspiration of the success of the hotel project, the acquisition

of a Convention Hall, the tenth largest in the United States, has been made possible. To date, with this additional attraction, there are twenty-three conventions booked for Camden for 1926.

The hotel serves the country 'round about for a radius of twenty miles, and the slogan adopted, "Meet me at the Walt Whitman," has become familiar in South Jersey. Indeed, the Walt Whitman can be truthfully credited with the starting of a new era for Camden. It is the community rallying point and has had an almost unparalleled success since its opening last September.

WILLIAM KENNEDY,
Executive Secretary, Camden Chamber of Commerce.

City Council Creates Honor Roll and Memorial Gift Commission

SACRAMENTO, CALIF.—This city has been the recipient of many generous gifts. In order to perpetuate this spirit of loyalty and patriotism on the part of her citizens, the City Council has created an Honor Roll and Memorial Gift Commission, consisting of nine members whose duties will be to collect full and complete information on all public gifts, donations, legacies, and bequests, of whatever nature, from the city's earliest history to date, and to arrange for the appropriate memorialization of the names of the donors and their gifts.

It will also be the duty of this commission to initiate an educational campaign to encourage emulation of the spirit of those who have already thus honored their city and themselves by public gifts; acquaint prospective donors with the needs of the city along various lines in the way of parks, playgrounds, schools, museum, art, charitable service, libraries, public buildings, etc. It is anticipated that the commission can also secure the funds by which city planning and other civic projects will be made possible.

The ordinance creating this Commission, which was introduced by Mayor A. E. Goddard, defines the duties of the Commissioners in detail, term of office, meetings and organizational provisions; they are to serve the city in this capacity without pay.

All acts of the commission are subject to the final approval of the City Council and under the supervision of the City Manager. All new gifts are subject to final approval and acceptance by the City Council.

H. G. DENTON,
City Clerk.

Many Local Organizations Cooperate in Houston Recreational Leaders' Institute

HOUSTON, TEXAS.—Realizing that the vital element in any program is the quality of its leadership, twenty-six Houston organizations responded this spring to the call of the Houston Recreation Department to organize for the purpose of promoting training for leisure-time leadership.

The Houston Recreational Institute Association was formed with the following member organizations:

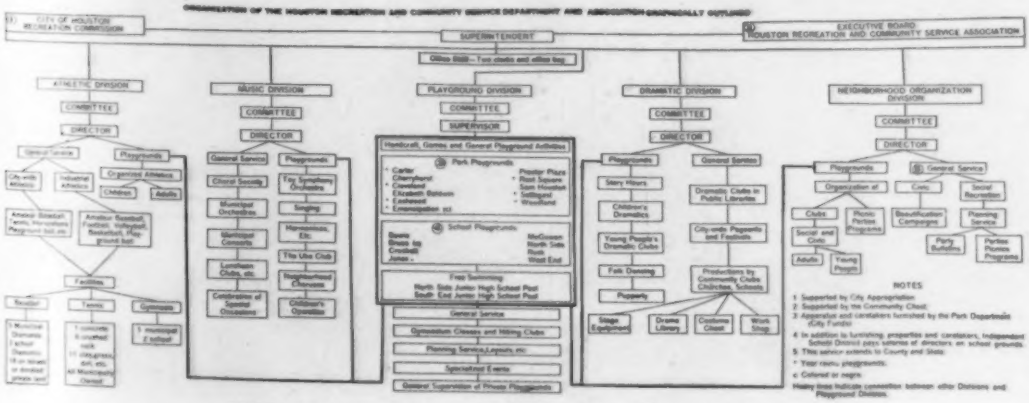
Autry (Community) House, Boy Scouts, Central Council of Parent Teachers' Association, Child Welfare League, City Federation of Women's Clubs, City Schools, College Woman's Club, Council of Jewish Juniors, Council of Jewish Women, Epworth League Union, Galveston-Houston District of Young Women's Christian Association, Harris County School for Girls, Houston Assembly of Young Peoples' Service Leagues, Houston Athletic Club, Houston Girl Scouts, Houston Public Library, Houston Recreation Department and Houston Recreation and Community Service Association, Houston Teachers' Association, League of Protestant Women, Rice Institute, St. Paul's Methodist Church Sunday School Teachers' Council, Story Tellers, Temple Beth Israel Community House, Young Men's Christian Association, Young Women's Christian Association, Women's Club.

An association of 18 negro organizations was formed to sponsor the colored section of the Institute.

The financing of the first Institute, held March 1 to April 17, came from member organizations, patron members, registrations and contributions from organizations either outright or through the employment of instructors.

The faculty consisted of such authorities as Elizabeth Burchenal, Chairman, American Folk Dance Society; Mary Gould Davis, instructor in story telling, New York Public Library and Pratt Institute; Eleanor McMain, headworker, Kingsly House, New Orleans; John Martin, game specialist; Francis Wheeler, music specialist, Elizabeth Hines Hanley, dramatic specialist, and George Johnson, colored recreation specialist—all of the Playground and Recreation Association of America.

In addition to the classes, no pains or expense necessary to success were spared. The visiting



HOW RECREATION IS ORGANIZED IN HOUSTON, TEXAS

CHILDREN OF THE "VERY LITTLE THEATRE" IN "THE SING-SONG MAN," HOUSTON

instructors were presented to the Houston public in open sessions aranged for this purpose. Yet, a small treasury balance was carried over as a nest-egg for another year. Such is the power of cooperation.

Of the 593 students registered, 373 received certificates for attendance of five complete weeks and 107 attended all classes for the seven weeks. The total attendance at all classes and activities was 18,733. Aside from the splendid instruction gained, many of the students expressed the conviction that the associations formed were enough to justify the perpetuation of the Institute.

The Recreation Department is reaping a rich harvest of volunteer and better-trained employed workers, and all member organizations report that the Institute is bearing fruit for them. Tentative plans have already been made for a greater Institute to start in the fall.

The Houston Recreational Institute Association is organized as a permanent institution. Dr. E. E. Oberholtzer, Superintendent of Schools, is President; Mrs. Bertha Lee Gaines Allison, of the Story Tellers, Vice-President; Corinne Fondé, Superintendent of the Houston Recreation Department, Secretary-Treasurer.

LAUNCHING MODEL POWER-BOATS, HOUSTON RECREATION DEPARTMENT

A BEAUTIFUL RESIDENTIAL STREET IN SHREVEPORT

New Court House for Caddo Parish, La.

SHREVEPORT, LA.—The eight-story, million-dollar Court House for Caddo Parish, now under construction in the heart of Shreveport, will stand as a symbol of the progressive spirit of the citizens of this parish by whose vote the project was made possible.

The design of the exterior of the building, a drawing of which is reproduced on the front cover of this issue of THE AMERICAN CITY, is a modern adaptation of the Classic Renaissance type of architecture, and will be finished entirely in buff and gray limestone. A striking dignity has been achieved through the mass and proportions of the design, as the elaboration of details has been omitted. The building has a 220-foot frontage, a depth of 120 feet, and a height of 125 feet in the center section.

On the first floor will be the quarters for the sheriff, the tax assessor, and the clerk. All departments on this floor are designed with high ceilings so that additional floor space may be made available if needed in the future, through the erection of balconies or mezzanine floors. The second-floor plan includes four civil court rooms and a criminal court room, a suite of offices for five judges, quarters for the District Attorney, and a library. The Juvenile Court and the Court

"THE TRIANGLE," ONE OF SHREVEPORT'S STREET INTERSECTIONS

of Appeals, with a suite of offices for the three judges of the Court of Appeals, will be located on the third floor; quarters for the Police Jury, Parish Engineer, and Grand Jury, on the fourth floor; and the School Board, Farm Bureau, and Parish Health Unit on the fifth floor. The sixth floor will be left vacant for future growth.

A jail providing for 350 prisoners will occupy the seventh and eighth floors, and will be reached only by an elevator and stairway leading to the Sheriff's department and the criminal court room.

Automobile parking space for tenants of the Court House will be provided for on the basement or ground-level floor, in addition to quarters for a unit of the National Guard, and storage space.

JOHN W. LEWIS, Jr.,
Publicity Manager, Chamber of Commerce.

Newark Health Inspectors Enforce Ordinance Against Unmuzzled Dogs

Courtesy of Newark Evening News

THE MOTORCYCLE SQUAD OF THE HEALTH DEPARTMENT, NEWARK, N. J., STARTING ON A HUNT FOR UNMUZZLED DOGS

UNMUZZLED dogs in Newark, N. J., must stay in their owners' yards, unless on leash, from June 1 to October 1. The photograph above shows the five health inspectors who are touring the city to enforce the ordinance designed to protect the citizens from being bitten by dogs running at large.

The city has been divided into two districts, and two inspectors have been assigned to each, the fifth to travel alone to investigate complaints about dogs. A sixth man, who is assigned to the Health Department as a chauffeur, will be used in cases of emergency. The men are under the supervision of Chief Inspector William H. Young, of the Sanitary Division. The motorcycle squad will check up on the owners of all dogs found unmuzzled or unleashed on the streets. Summonses will be issued, and Health Officer Charles V. Craster, M. D., will ask the courts to impose fines.

Dr. Craster condemns the strap muzzle, which prevents the dog from opening its mouth. He recommends the wire cage muzzle.

Cleaning the Streets of Cleveland, Ohio

IN Cleveland, Ohio, there are ten flushers which work every night in the downtown section and six which work in the outlying sections. There are eight sweepers which are used prior to flushing. In the downtown section, white wings are employed on double shifts, from 4 in the morning working until noon and then until 8 o'clock. At 10 o'clock flushing is started.

According to J. G. Thomson, Commissioner of Streets, Cleveland, Ohio, no trouble is experienced by catch-basins being blocked with dirt washed into them by flushing. For catch-basin cleaning, Auto-Eductors are used, although there are four gangs working without Eductors. Since the Eductors have been used, there has not been 10 per cent of the trouble they had prior to the time they began using them with blocked catch-basins. There was a time when from twenty to twenty-five complaints on blocked catch-basins were received in fifteen to twenty minutes during a storm, but now there are not as many complaints in a whole year.

Public Utilities

A Department Conducted for THE AMERICAN CITY by Professional Members of the American Public Utilities Bureau, 50 Madison Ave., New York:

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Rates and Finance
J. C. BRACKENRIDGE
Railroads
BENJAMIN COHEN
Gas Investigations
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Street Railways and Busses
GEORGE A. JOHNSON
Water-Supply and Sanitation
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Electric Light and Power
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Telephones
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Accounting

Factors in Rate Regulation

The Rate Base—Valuation of Physical Property

NO subject in the entire field of regulation has received as much attention at the hands of public utility commissions and courts and in the discussions of the problems of regulation by public officials, utility officials, and students of the subject as has the question of the proper method of valuation of property.

No doubt this question would never have become so important had it not been for the abrupt and abnormal rise in prices during and just prior to our entry into the War. The utilities found themselves in a position where they had to increase rates in order to meet the rising costs of operation. At the same time, in order to attract capital required for extensions and improvements, they had to pay a greater rate of interest on the money they raised.

To be readily salable, bonds had to carry a higher interest rate, and stocks a better dividend promise. There immediately arose a clamor on the part of some investors in utility stocks, underwriters, promoters, and utility officials, for allowances by commissions and courts of rates of return on materially higher valuations, to enable investors to realize the equivalent in buying power of the pre-war dollar. It was in line with all moves which had their origin in the depreciated value of the dollar. Labor demanded and got higher wages to compensate it for the diminished buying power of the money it was earning. Investors in public utilities could not be expected to be satisfied with 4 per cent or 5 per cent yields when they could safely invest their money at considerably higher rates.

It should be borne in mind, in this connection, that the amount of money required for interest and dividends has no controlling effect whatever on rates to be charged or on the fair return to be earned on property actually devoted to the rendering of service to the public. In rate determination, the amount of stocks and bonds which are outstanding at the time of the inquiry is only of secondary importance. Securities outstanding may be out of all proportion to the property values, for, on the one hand, a good deal of watered stock may have been issued years ago, and, on the other hand, in conservative companies a large part of the plant may have been built by the use of surplus funds or the investment of the depreciation or other reserve funds. The amount of the investment actually devoted to the service of the public is the only figure whereon the utilities are allowed a return.

No Increase in Return for Bondholders

When the utilities were forced to seek higher rates, they had to bear the burden of proving that they were not earning a fair return on the fair value of their property. They succeeded quite well in convincing the courts to take into account the reproduction cost of the property at the time of the appraisal as one of the factors to be given consideration. Yet the majority of the investors for whose benefit it was claimed the fight was waged, have not been benefited. Rather, the benefits have accrued to the managers and common-stock holders. It should be remembered that bonds holders who furnished the greater part of the money which was used to build and extend the plants have a fixed rate of return in the form of contractual interest on their bonds—and no matter what the earnings may be they get no more and no less—assuming, of course, sufficient revenue to pay the interest. In some cases the common-stock holders have fared extremely well, as will be seen from the following illustration:

Let us assume that a company has property which cost $1,000,000 and on which a valuation was placed of $1,500,000, and that an 8 per cent return thereon was allowed. This requires earnings above expenses of $120,000. Let us assume also that there has been issued in the creation of the property $600,000 in 5 per cent bonds and $400,000 in common stock, the balance representing investment of reserves and surplus. We can readily see that, of the amount which the company is permitted to earn as a return ($120,000), only $30,000 is required to pay bondholders' interest; the balance, $90,000, is available for stockholders. On the $400,000 of stock outstanding this represents about 22.5 per cent, a very handsome return in an industry where the business and profits are to all intents and purposes guaranteed and where the hazards are very small. This condition is brought about because of the fact that the stockholders receive not only their share of the higher return allowed, but also that of bondholders, as well as the benefit of the earnings on the surplus and reserve funds.

This situation goes a long way toward explaining some of the recent wild fluctuations and manipulation in public utility stocks on the stock market, for this condition is present to a lesser or greater extent in practically all utilities. What remedy there may be for this situation, which has been recently aggravated to some extent by the issue of non-voting preferred stock, will be left for future discussion.

BENJAMIN COHEN.

Items of Public Utility News

Higher Telephone Rates in New York

NEW YORK CITY.—New rate schedules of the New York Telephone Company, designed to provide additional annual revenues in New York City of $9,111,378, over the former rates, were approved on June 23 by the New York Public Service Commission, effective July 1. About $7,000,000 of the increase had previously been authorized in a temporary 10 per cent surcharge.

Sixty-nine per cent of the telephone subscribers in New York City have residence telephones. The cost of individual residence service in all zones is advanced from $3.85 to $4 a month; two-party lines in zones 2, 4, and 5, $3.30 to $3.50; unlimited, zones 4 and 5, $5.78 to $6.25; two-party, zones 4 and 5, $4.68 to $5.25; zones 3, 6, and 10, $3.85 to $4.25; two-party, zones 3, 6, and 8, $3.30 to $3.75; four-party, zones 3, 6, and 10, $3.03 to $3.25.

Business messages, individual, range in increases from $3.85 to $4.25, $4.40 to $4.75, $5.23 to $6, and $4.13 to $5, according to the zones. There are also small increases for extension telephones, ranging from 10 to 20 cents, and increases of from 15 to 30 cents for various capacities of intercommunicating stations. Increases for private branch exchanges in all zones range from $2.75 to $3.50 for the cordless type to from $4.95 to $7 for the 30-cord type; and from $6.60 to $9, $6.60 to $12, and $11 to $20 for the various cords up to the multiple type.

Increased Wages on Boston Elevated

BOSTON, MASS.—An agreement has been reached by the board of trustees of the Boston Elevated Railway, Boston, Mass., with the carmen's union over wages and working conditions for another year, beginning July 1. This is the first time for some years that the matter has not gone to arbitration.

There is no change in the basic rate of pay to the uniformed carmen, except the motormen of the subway trains, who will receive 76 cents an hour, an increase of 1½ cents. The carhouse repair men, of whom there are about 1,000 in the employ of the company, receive an increase of 4½ cents an hour, making their pay 80 cents, but their week is reduced from seven to six days. The uniformed carmen receive no more pay, but each one will receive a uniform free.

Bus Franchises Under Consideration

NEW YORK CITY.—Until he has determined what course is for the best interest of the city, Mayor Walker will not grant any bus franchises. This and more emphatic statements from him were his reaction to a large delegation who went to City Hall on June 30 to urge speedy action on bus installation. The Mayor scored the threats made upon him in this matter of granting bus franchises and the false rumors to "rig" the stock market. Within the coming month, he believes, the Board of Estimate, which has been considering 200 applications, will be prepared to bestow the franchises after having given thorough scientific study to the matter.

Realtors Subsidize Bus Service

HOUSTON, TEXAS.—Because of the ship channel making Houstan, Tex., a deep-water port, as well as other causes common to the great Southwest development, this city has experienced an unusual expansion. This growth has expressed itself in part by extensive real estate developments from 3 to 5 miles out from the center of the city and remote from any form of transportation except the automobile. The real estate developers have realized the importance of common carrier transportation, but the Houston Electric Company, operator of the local transportation system, was naturally unwilling to add unprofitable lines in order to develop new territory.

The compromise made was a contract between the real estate operators and the railway by which the company operates the bus service and the real estate operators agree to pay all costs, including the per car-mile operating charges and a proportion of depreciation, fixed charges, taxes and license fees each month. All revenue is credited, so that in reality the realtors pay only the deficit. The company, however, buys the bus equipment and hence contributes its part by financing the project.

The contract provides that the Houston Electric Company may take over the operation at any time that it so elects, and agrees to take it over whenever the gross receipts shall show a surplus over all expenses for a period of six months. Any surpluses made during individual months are credited to the realtors subsidizing the project. As there is no state regulation in Texas, permits to operate must be obtained from the city. The company protects itself by getting permits only from year to year, each renewal being based on the mutual desire to continue the contract for another year.

At present there are four of these subsidized lines running from outlying points to the center of the city. One feature of interest is that these lines are operated express from the outlying district to the city center, so that a faster service to these communities is being furnished. At the same time there is no conflict with existing car and bus lines that may be paralleled for a distance near the city center. A 10-cent fare is charged on all such lines, with transfer privilege to and from cars. The over-all costs of these express lines are from 26 to 28 cents per bus-mile. The gross business of the lines is gradually increasing and varies between 15 to 18 cents per mile, so that the deficits are not large, because comparatively infrequent service is offered.

All busses operated in this manner are clearly marked so that the patrons know that the line is not necessarily permanent and depends on the subsidy of the development company named in each case. This somewhat temporary feature is recognized and has a certain effect on land purchases. The general belief is that the line will eventually become a paying proposition and become permanent and that the subsidy will last until this point is reached.

Settlement of Dayton's Gas Rate War

DAYTON, OHIO.—On the basis of the city's proposal of 70 cents a thousand cubic feet for the first 10,000 feet of gas used, with a scale downward for increased consumption, the gas rate war ended abruptly recently through the acceptance of the city's offer by the Dayton Power & Light Company.

It was agreed that the new rate will go into effect September 1, 1926, and will continue for four years, after which time a new franchise and a new contract will be entered into by the city either with the Dayton Power & Light Company or some other fuel-furnishing enterprise.

Between now and September 1 the present rate of 50 cents a thousand feet for the first 5,000 feet used will obtain.

The new rate specifies, in addition to the 70 cents a thousand for the first 10,000 feet, 65 cents a thousand for the next 5,000 feet, 60 cents a thousand for the next 5,000 feet, and 55 cents a thousand for all gas consumed in excess of 20,000 feet.

The rate which was agreed upon was proposed by the city as a compromise. The Dayton Power & Light Company asked 75 cents a thousand for the first 2,000 feet used and 70 cents a thousand for the next 8,000 feet used.

In making the offer, the city specified that it wanted some assurance by the power company that adequate gas will be furnished Daytonians at all times.

This guarantee is given in a letter to City Manager F. O. Eichelberger, and signed by F. M. Tait, President of the Dayton Power & Light Company.

Rate Reduction for Electricity

FORT WORTH, TEXAS.—A flat rate of 6½ cents a kilowatt-hour will be charged residence owners by the Fort Worth Power & Light Company under the agreement reached with the city. In addition, first costs in the lighting of a new home will be lessened by the decision to abrogate the demand charge, a set cost hitherto based on the number of outlets in the home.

Under the old rates 8 cents an hour was charged up through the thirty-second hour, and 6 cents was the rate for every hour thereafter. The new schedule provides for a uniform charge for each hour, with 50 cents as a minimum bill for one month.

All schedules worked out have not yet been published, but City Manager Carr asserted that small residential power users, that is, those who employ electricity for

refrigeration, cooking, and other purposes will be favored by a material reduction.

The new schedule for commercial lighting is: first block, 6½ cents; second, 4 cents; and third, 2 cents for each kilowatt-hour.

The following statement was issued by City Manager Carr at the conclusion of the series of conferences which resulted in the decreased rates:

"An amicable settlement has been reached between representatives of the Fort Worth Power & Light Company and the committee of the City Council, which has been for a long time investigating rates charged in Fort Worth for residential lighting, commercial lighting, and small power purposes.

"Concessions were made by both sides in this matter. The city does not receive all that its investigators indicated should be given. On the other hand, the concessions made by the Fort Worth Power & Light Company are materially more than their experts had felt should be given.

"The retroactive feature of the new rates was waived by the city as a concession in order to secure settlement at this time. We estimate total saving under new rates approximately $200,000 per year."

The American Public Utilities Bureau of New York City was employed by the city of Fort Worth to make the investigation which resulted in these rate reductions.

Reduction in Water Rates

BESSEMER, ALA.—Bessemer will get a substantial reduction in water rates as a result of a conference between representatives of the public service commission and city officials.

A reduction from 30 cents to 27½ cents per thousand gallons has been agreed upon.

The change will not affect minimums, flat rates, or fire protection.

City officials are highly satisfied over the new water rate, which became effective July 1, and which, it is held, gives Bessemer the best water rate of any city in the state supplied by a privately owned plant.

The World's Cartoonist Has Fun with The New York Telephone Decision

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The Model "L" Motor Lawn Mower and Roller mows and rolls simultaneously a 25 inch swath. With the gang unit attachment its cutting capacity is increased to 60 inches enabling 1 man to complete 10 acres of mowing a day on one gallon of gasoline. Extremely flexible, it cuts close up to and around trees and shrubbery and along walks and borders. Its construction is sturdy, without being heavy, and its performance is *dependable*. May we send literature and have our nearest dealer demonstrate on your grounds—at no expense to you, of course?

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Building Codes and Building Costs

The Man Who Builds a Home or Office Building and Finds Costs Abnormally High May Be Paying the Cost of a Badly Drawn or Antiquated Building Code

THAT it is by no means necessary "to lay down requirements for an office building that read like the specifications of a safety vault, or requirements for a single detached house that read like those for a 20-story hotel," was brought out strongly by John M. Gries, Chief of the Division of Building, United States Department of Commerce, in a talk on the advantages of uniform building codes before the National Association of Real Estate Board in convention at Tulsa, Okla., on June 8.

"We ordinarily think of differences in building costs among various cities as due to wage scales, efficiency of management and labor, and prices of materials," said Mr. Gries. "But there is a differential established in the varying requirements of building regulations that may well be investigated by organizations which are interested in seeing their home cities grow. Building codes lay down conditions under which several billion dollars' worth of new buildings are constructed each year. When they are wisely drawn and administered, they protect public safety and health and reduce fire hazards. When they are not wisely drawn ,they usually not only fail in their original purpose but add unnecessarily to the cost of building."

Parallel with advances in the art of building which have made possible new economies in construction, tests made under the United States Bureau of Standards, and other engineering tests, have given a more accurate knowledge than was formerly possessed as to amounts of loads and stresses that various building materials may be safely subjected to.

"Until two or three years ago plumbing requirements had to be framed largely by rule-of-thumb methods, as there had never been really comprehensive studies of what goes on in pipes with an intermittent flow of water," Dr. Gries said in illustration. "But at the request of the Department of Commerce Subcommittee on Plumbing Codes, the Bureau of Standards undertook a series of tests extending over more than two years. With the results in hand, the subcommittee was able to work out for the first time a set of requirements which assure sanitary installations, without unreasonable allowance for unknown factors and without the risks which used to accompany some of the cheaper installations in house drainage systems."

Is Yours a Patchwork Code?

In too many cities the building code is the "orphan" variety, containing a patchwork of requirements copied from other codes which in turn have taken them from others until the original source is unknown. Many of their requirements prevent economies that have long since been made possible by advances in the art of building. Some which may have been copied innocently enough, were first framed by men who knew exactly how they wanted to state certain passages in order to obtain advantages over some competitor. Other codes have grown from small beginnings and their arrangement may reflect not only the present organization of the city government but preceding forms.

Wide variations found by the Department of Commerce in existing building codes were cited as follows:

1. As to minimum thickness of brick walls in the first story of two-story buildings, the requirements were found to be anywhere from 8 to 16 inches. In other words, if, as was eventually determined by tests carried out by the Bureau of Standards, a reasonably well-built 8-inch wall would provide for health and safety, then the amount of material required by the more exacting codes could be reduced by one-fourth or one-half, which would mean a great economy in building.

2. As to strength of floors, the codes were found to require the first floor of dwellings to be designed with sufficient strength to withstand minimum floor loads ranging from 25 to 100 pounds per square foot. Required allowance for upper floors of office buildings ranged from 40 to 150 pounds per square foot. Other types of buildings had similar variations. Obviously, safety was being disregarded in some instances, and an unnecessary amount of building materials and labor was being required in others.

3. Stress requirements for concrete columns showed wide variation. For greatest permissible stress for direct compression on columns of concrete reinforced with spirals, the codes varied from 500 to 900 pounds per square inch.

4. As to plumbing regulations, there are many cities in which 4-inch vertical soil pipes are the smallest allowed in dwelling construction. The 3-inch pipe was found by the Bureau of Standards to be more satisfactory for ordinary dwellings from a sanitary point of view and it is accommodated very much more easily in a stud partition

Because of the more even distribution of weight, Autocars are especially suited for work which requires the hauling of surging liquid loads. This Autocar flusher is owned by the City of Salem, Mass.

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or wall of a house.

5. Allowable compression for wood materials is a subject which the Department of Commerce is now studying. The National Lumber Manufacturers' Association finds in 117 codes that allowable compression parallel to grain in short columns of dense Douglas fir is given all the way from 1,600 to 100 pounds per square inch. Which is right and which is wrong? Only competent engineering investigation can decide. This has been carried on for some time at the Forest Products Laboratory of the Department of Agriculture, and the results are being used in a report soon to be issued by the Department of Commerce Building Code Committee on allowable stresses in timber, steel, concrete, and cast iron.

A Good Building Inspector Essential

Attempts sometimes made to devise a self-enforcing code by requiring walls to be so thick, allowances for floor loads to be so great, that no matter how ignorant or unscrupulous the builder, a safe building would result, is very poor economy, Dr. Gries asserts, for it limits the scope of good designing ability and economical use of materials, and deters new building. The total cost to the community is many times the expense of maintaining efficient building inspection. A good building inspector is a much more efficient protector of the public safety than a mere set of regulations.

A study of existing building codes has been made by a special committee appointed by the Department of Commerce, with a view to drafting a recommended uniform code that would lay down requirements not in excess of what engineering tests have shown to be sufficient.

The committee has worked with the cooperation of building officials, architects, engineers, realtors, builders, material manufacturers, and other agencies and groups concerned with building standards, and has made six recommendations in six published reports.

How Far Is Uniformity Desirable?

As to how far uniformity in building codes is desirable, Dr. Gries listed the following particulars:

1. Technical structural requirements may be practically uniform except in places subject to special hazard from earthquakes or tornadoes. A steel column of known grade is still a steel column whether in Portland, Maine, or in Portland, Oregon. There is no apparent reason why the load it will carry should be figured by a different formula in the two cities. Wood also is a material whose behavior for a given variety and grade can be computed with a reasonable degree of accuracy. Studies of concrete have been prosecuted so vigorously that there is fairly good agreement on allowable working stresses. The characteristics of cast iron are well known.

2. There can be greater uniformity in arrangement. Wastes and delays and annoyances arise from unsystematic arrangement of the subject matter and from variations in arrangement between cities. Some codes leave the prospective builder floundering and uncertain, never sure that a qualifying clause may not be tucked away in some obscure passage.

3. If there cannot be complete uniformity in the details of administration in different cities, there can be at least greater unity in administration within a given city. In a large city it is now sometimes necessary to secure from 17 to 22 separate permits and certificates in order to erect a flat building to accommodate three or four families. Health officers, the police department, the city engineer's office, and other bureaus may have to pass on various points.

The Commerce Department's building code committee recommends that the building inspector be the responsible officer in direct contact with the public in all ordinary matters.

Schenectady Sewage Treatment Plant Markets Its Sewage Sludge

AN organized effort to sell the sludge produced at the sewage works at Schenectady, N. Y., which was begun slightly over a year ago, has met with remarkable success and bids fair to result in demand for the entire output of the plant in the future. To date, some 2,500 cubic yards of dried sludge from the two-story Imhoff tanks have been sold to the farmers of the county, and last year's production has been completely removed. The price charged has been from 10 to 25 cents per load at the plant. The farmers cart the material away in trucks and farm wagons. The average haul is 6 miles; the longest, 14 miles. Excellent results were obtained with the sludge last year, and the consensus is that it is as good or better than barnyard manure. All types of crops were benefited and equal success was reported on both sandy and clayey soils.

When the attempt to sell the sludge was first made, the plant superintendent enlisted the aid of the local Farm Bureau Association, which advertised the value of sludge as a fertilizer. Articles appeared in the local press and the Farm Bureau periodical. The Bureau also sent out a form letter to its members. Exhibits were displayed at meetings of market gardeners, and the superintendent addressed meetings of the farmers in two places in the county. Samples of sludge were sent to Cornell University, and a letter recommending its use was received. This information passed rapidly from farmer to farmer, and sludge soon began to sell at the plant.

Schenectady's experience should encourage other cities having sewage disposal plants to try to market their sludge.

—*Health News*, N. Y. State Department of Health.

AMERICANS SHOULD PRODUCE THEIR OWN RUBBER... Harvey S. Firestone

Cut-away section of a Firestone Gum-Dipped Pneumatic Tire shows a single cord greatly magnified, and untwisted into fifteen smaller cords composed of many little fibers, all thoroughly saturated and insulated with rubber by Gum-Dipping.

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Still greater protection is assured by the special Steam-Welding process that makes Firestone Tubes an endless air tight unit. Your Firestone dealer can give you interesting facts about Firestone performance for fire chiefs—see him.

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"Our drivers comment on the easy steering qualities and the safety they feel with Firestone Gum-Dipped Pneumatics."

J. J. Baker, Pres., East Greenbush Fire Co., East Greenbush, N. Y.
"Firestone Gum-Dipped Pneumatics give the best service in holding air pressure and best traction on concrete, macadam or dirt roads."

Fred B. Wilcox, Fire Chief, Centralia, Wash.
"Firestone Gum-Dipped Pneumatics give unusual traction and resist skidding on both wet and dry paved and unpaved streets and have great resistance against moisture, wear and ageing."

J. D. Weisinger, Fire Chief, Enid, Okla.
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GUM-DIPPED PNEUMATICS FOR FIRE APPARATUS

Manual versus Automatic Control of Signals on State Highways

By W. G. Sloan

State Highway Engineer of New Jersey

IN these days of heavy and increasing traffic, the design of a highway is based on its ability to handle a certain estimated number of vehicles, and the elements entering into this consideration include line and grade, width of pavement, type of pavement, elimination of grade crossings of railroads and important highways, skirting of towns to eliminate so far as possible local traffic, and the use of proper traffic-regulating devices. Failure to properly plan and carry out this last-mentioned part of the transportation system nullifies in a greater or less degree the effectiveness of the best planned, constructed, and maintained highway it is possible to provide.

Proper traffic regulation permits the free and unobstructed movement of traffic in such a number of lines as the width of the highways will permit, and at such speed within the legal limits as is consistent with safety; the traffic movement on one road to stop only when and during the period proper to meet the demands of traffic on intersecting roads, the period of such stopping being determined by the relative volumes of traffic on the intersecting roads.

The volume of highway traffic, particularly outside the larger cities, is extremely variable, not only from month to month and day to day, but from hour to hour. In planning our highways provision must be made for maximum-hour demands. From studies made in the Highway Department of New Jersey it is found that the extreme monthly variation is about 500 per cent and that the relation of maximum-hour traffic to total daily traffic is as 1 to 12.2; or, in other words, maximum-hour traffic is more than 1000 per cent of what it would be if traffic were uniformly distributed throughout the year, and many times this figure if based on minimum - hour traffic.

The above takes into account total traffic or traffic moving in both directions, and here again comes a further complication in that generally traffic movement is heavy in one direction at certain hours and in the opposite direction at others.

A method of regulating traffic, to be successful, must minimize total car-minutes of delay to traffic. In the simple case of two intersecting highways, therefore, it may be readily calculated what interval each of the roads should be open for traffic, based on an assumed volume of traffic on each of these roads; and were these traffic volumes on each of the roads constant, an automatic device could easily be devised which would control the situation. The fact, however, that the traffic on neither road is uniform, imposes an unfair delay to those using one or the other of the roads, if regulated by any mechanical device.

There are locations in the state at which such automatic signals have been installed, where at certain hours traffic on one of the intersecting roads is 400 times that on the other and where at intervals of less than a minute the main highway traffic is stopped. Obviously, such a device does not suit such conditions. With the removal of such automatic signals and the re-

Who Shall Control Traffic Regulation on State Highways within Municipal Limits?

Recent action by the State Highway Commission of New Jersey in the matter of traffic control on sections of state highways within municipal limits has aroused a great deal of discussion, both as to the wisdom of this special ruling and as to the rights of municipalities in local traffic regulation. The point of view of the Commission is outlined in the accompanying article, which comprises excerpts from an address by the State Highway Engineer, on June 21, before the Association of Boards of Chosen Freeholders of New Jersey.

In a subsequent issue an opportunity will be afforded to local officials in places of less than 16,000 population to express their points of view in this matter. This population limit is fixed because of the New Jersey law which provides that no state highway shall extend into any municipality having a population of more than 16,000; presumably on the basis that the local traffic in the larger municipalities is proportionally so much greater than the through traffic as to make it unfair for state funds to be appropriated for highway maintenance in such cities.

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For Road Construction Repair and Maintenance

"Dependable"—describes Tarvia Service

ENGINEERS feel a definite sense of security when they specify Tarvia. They know:

That there is no variation in the quality of Tarvia (strict laboratory control insures this fact).

That the Tarvia is available exactly when and where they want it.

That expenses can be kept to a minimum by practical and readily available Barrett distributing equipment.

That experienced Tarvia field men can be relied on for intelligent and unobtrusive cooperation.

Success in *your* highway work is a practical certainty when you make an ally of this material and service.

The Barrett Company

New York	Chicago	Philadelphia	Boston
St. Louis	Cleveland	Cincinnati	Pittsburgh
Detroit	Kansas City	Birmingham	Dallas
Minneapolis	Salt Lake City	Bethlehem	Lebanon
Youngstown	Milwaukee	Toledo	Columbus
Baltimore	Syracuse	New Orleans	Rochester
Providence			Buffalo

In Canada:

THE BARRETT COMPANY, Limited

Montreal Toronto Winnipeg Vancouver

quirement that traffic on the crossroad must come to a full stop before entering or crossing the main highway, such traffic would in all probability find an opportunity to safely cross within a reasonable period; or, if it were unable to do so, could undoubtedly reach some crossing protected by a manually operated device where the volume of traffic was such as to justify the stopping of traffic on the main highway at more frequent intervals.

The mechanically controlled or automatic traffic signal would operate satisfactorily if traffic remained uniform at each of the roads affected, provided its period of operation were set to conform to the relative traffic density on these roads; and within certain limits its operation would be satisfactory even if the total traffic volume varied and varied in the same proportion on each of the roads affected.

Outside these larger municipalities and on highways carrying through traffic, uniformity of traffic is not even remotely approached, and automatic regulation is entirely unjustified.

Aside from the loss in time to the users of the highway due to improper traffic regulation, there is a direct money loss due to increased cost of vehicle operation under the condition imposed. This in the aggregate assumes very large proportions.

Highways are roads which every citizen has a right to use on equal terms. There are no preferred classes of traffic. Through traffic must not be penalized for the benefit of local traffic belonging to any particular municipality or district. The municipalities should be willing to accept their fair share of the delay consequent to the heavy traffic now being carried by our highways and they should likewise be willing to accept such added burden of expense as is necessary to properly and fairly regulate the flow of this traffic within the territory over which they have jurisdiction.

EDITORIAL NOTE.—Traffic devices on state highways were definitely removed from control by municipalities in New Jersey under an amendment to the act concerning municipalities adopted by the 1926 Legislature, reading as follows:

"The governing body of every municipality shall have the power to establish safety zones, to erect, construct and maintain and operate standards, commonly called 'silent policemen,' beacon lights, guideposts or other structures, which in its judgement may be necessary for the safety and convenience of persons and vehicles using the streets in said municipality; *provided, however, that nothing herein contained shall apply to any portion of any state highway of this state.*"

Resolution on Traffic Regulation Adopted by the State Highway Commission of New Jersey

WHEREAS the State Highway Commission did on May 4, 1926, adopt as its policy that it will not approve, on any state highway, the installation, maintenance or use of any traffic-regulating device which is automatically controlled or manually controlled from a point so remote that the person operating the device is not able to see the traffic condition at the point or points affected, and

WHEREAS, the State Highway Commission has received the recommendations of the State Highway Engineer as to a proper method of securing the best results,

THEREFORE, BE IT RESOLVED, that the State Highway Commission does hereby determine that it will approve the erection and maintenance of manually operated traffic-regulating devices, such devices being so placed as in no way to obstruct the paved width of the highway and to be operated by a man so placed as to have a full view of traffic conditions at the point where traffic is heavy on both the state highway and the intersecting road; at other points where traffic conditions are not as heavy or where the municipality is financially unable to station the necessary officers, warning devices in the nature of flashing signals may be placed and be so located as to leave unobstructed the full width between curbs of the state highway, and

BE IT FURTHER RESOLVED that for all intersections other than those having manually controlled positive traffic-regulating devices suitable ordinances should be passed by the municipalities having control, requiring traffic on the crossroads to come to a full stop before proceeding to the intersection, whether such intersection is protected by a warning device or not, and

BE IT FURTHER RESOLVED that the State Highway Commission will approve the installation of traffic-regulating devices, whether positive stop-and-go or flashing signals, by suspension above the center of the highway or by placing on the curb line, as conditions best require, all in accordance with the foregoing resolution, and with the understanding that they shall in no event be so placed as to obstruct in any way the width of the state highway between curbs.

Song of the Signal Lights

Red glow! Green glow!
  All around the town.
Have a care! The ruby glare
  Stares the traffic down.
Red stop, full stop—
  Why the crazy speed?
"Take a breath and spare a death,"
  The red signs plead.

Yellow light! Mellow light!
  Tells a fellow WHEN,
Are you going left or right?
  So are other men.

Golden glow! Then you know
  When to cross the stream.
Never let your eyes forget,
  Or your purpose dream.

Green light! Glad sight!
  Right o' way for you—
Sing a song and hop along,
  Lead the others through.
Green flare! All's fair
  In the emerald's glow.
Down the line the beacons shine;
  "Green light! GO!"

—Ali Ben Zine in Chicago Evening Post.

Bigger Crawlers—a Bigger Engine

More Digging Guts Than Ever

During the past four years, the Barber-Greene Ditcher has accomplished surprising things—that even we, ourselves, never expected.

Digging results have been so surprising to ditcher users and trench excavators that to the best of our knowledge they bought more Barber-Greenes last year than any other one make of machine.

The Barber-Greene Vertical Boom provides a "milling digging action" instead of the usual "shoveling action."

And it digs through coral rock—through hard clay—through asphalt pavement—through frozen ground and similar material where no ditcher has ever dug successfully before.

The vertical boom digs straight down. It digs manholes, it digs laterals flush with the main trench. It leaves but a minimum of unopened trench in dodging obstructions.

And it starts into and pulls out of a trench easily and quickly.

Full-length crawlers creep safely across rough ground and loose soil. And they help to hold the digging boom to line and grade.

Light weight compactness makes the Barber-Greene so fast on its feet that it can handle short-run work as well as mile-a-day straight-away digging.

The famous overload release protects both the ditcher and whatever it encounters in its digging—automatically. If desired, it will keep the digging buckets pecking at whatever is in the way without damaging the machine.

And now the famous Barber-Greene standard model—the 44-B, with 5'6" boom—is equipped with new and bigger crawlers—and a new and bigger engine.

The crawlers have been lengthened to 7 feet 6 inches—and the engine has been increased to 41 horse power.

The latest Barber-Greene has all the features that made it famous—plus more digging guts than ever. A copy of Pamphlet 4426 will tell you about the latest model—and a copy of *Cutting Mains and Services* will tell you what the Barber-Greene is doing. Send for them both. The Barber-Greene Co., 515 W. Park Ave., Aurora, Ill.

BARBER GREENE DITCHER

VERTICAL BOOM

Only the Barber-Greene has the vertical boom that provides the machine tool "milling" action digging.

OVERLOAD RELEASE SPROCKET

Only Barber-Greene has the patented automatic release sprocket that protects both the Barber-Greene and what it encounters underground.

BARBER-GREENE COMPANY, 515 W. Park Avenue, Aurora, Ill.

Representatives in 50 Cities

When writing to Advertisers please mention THE AMERICAN CITY—Thank you.

Minimum Rates and Service Charges for Water-Meters—Part III

Prepared from Signed Reports from Water-Works Officials

(Continued from June and July issues)

MINNESOTA

Duluth

Monthly Meter Rates

First	10,000 cu. ft.	15¢ per 100 cu. ft.
Next	10,000 " "	12¢ " " " "
Over	20,000 " "	8¢ " " " "

Monthly Minimum Charges

⅝-inch meter	$0.50
¾-inch "	.75
1-inch "	1.00
1½-inch "	1.50
2-inch "	2.00
3-inch "	3.00
4-inch "	4.00
6-inch "	6.00
8-inch "	8.00

Winona

Monthly Meter Rates

First	5,000 gals.	30¢ per 1,000 gals.
Next	5,000 "	23¢ " " "
"	5,000 "	15¢ " " "
"	135,000 "	12¢ " " "
Over	150,000 "	9¢ " " "

Monthly Minimum Charges

⅝-inch meter	$0.75
¾-inch "	1.00
1-inch "	1.50
1½-inch "	2.50
2-inch "	3.50

MISSOURI

Lexington

Monthly Meter Rates

First	10,000 gals.	40¢ per 1,000 gals.
Next	100,000 "	35¢ " " "
"	100,000 "	30¢ " " "
"	500,000 "	20¢ " " "
"	1,000,000 "	15¢ " " "
Over	1,710,000 "	10¢ " " "

Monthly Service Charges

⅝-inch meter	$0.60
¾-inch "	.90
1-inch "	1.25
1½-inch "	2.50
2-inch "	4.00
3-inch "	7.50
4-inch "	10.00

MONTANA

Great Falls

Monthly Meter Rates

First	1,000 cu. ft.	30¢ per 100 cu. ft.
Next	6,000 " "	25¢ " " " "
"	3,000 " "	20¢ " " " "
Over	10,000 " "	13¢ " " " "

Minimum Monthly Charges

½ or ¾-inch meter	$1.50
1-inch "	2.00
1½-inch "	3.00
2-inch "	4.00
3-inch "	6.00
4-inch "	10.00

Miles City

Monthly Meter Rates

First	10,000 gals.	33⅓¢ per 1,000 gals.
Next	13,000 "	23⅓¢ " " "
"	53,000 "	20¢ " " "
"	224,000 "	13⅓¢ " " "
Over	300,000 "	10¢ " " "

Monthly Minimum Charges
(Allowing 4,000 gallons)

⅝-inch meter	$1.50
¾-inch "	2.00
1-inch "	2.50
1½-inch "	4.00
2-inch "	6.50
3-inch "	15.00
4-inch "	25.00

NEW HAMPSHIRE

Berlin

Meter Rates

First	1,500 cu. ft.	30¢ per 100 cu. ft.
Next	3,500 " "	22¢ " " " "
"	5,000 " "	18¢ " " " "
"	10,000 " "	15¢ " " " "
"	20,000 " "	12¢ " " " "
Over	40,000 " "	10¢ " " " "

Quarterly Service Charges
$1.00

NEW JERSEY

Egg Harbor City

Annual Meter Rates

First	50,000 gals.	35¢ per 1,000 gals.
Next	50,000 "	30¢ " " "
"	100,000 "	25¢ " " "
"	800,000 "	20¢ " " "
Over	1,000,000 "	15¢ " " "

Annual Minimum Charges

½-inch meter	$10.00
⅝-inch "	12.00
1-inch "	20.00
2-inch "	40.00

Hightstown

Quarterly Meter Rates

First	10,000 gals.	$3.75
Next	15,000 "	21¢ per 1,000 gals.
"	50,000 "	19¢ " " "
Over	75,000 "	15¢ " " "

Annual Meter Rentals

⅝- to ¾-inch meter	$4.00
1-inch "	10.00
1¼-inch "	18.00
1½-inch "	24.00
2-inch "	48.00
3-inch "	100.00
4-inch "	160.00
6-inch "	360.00

Little Falls

Quarterly Meter Rates

First	10,000 cu. ft.	$2.90 per 1,000 cu. ft.
Next	90,000 " "	2.45 " " " "
"	900,000 " "	1.90 " " " "
Over	1,000,000 " "	1.45 " " " "

Annual Service Charges

½- or ⅝-inch meter	$6.00
¾-inch "	10.00
1 inch "	22.00
1½-inch "	54.00
2-inch "	72.00
3-inch "	175.00
4-inch "	250.00
6-inch "	480.00

The minimum quarterly bill for meter service shall be the fixed annual service charge plus $3.

Mays Landing

Annual Meter Rates

First	50,000 gals.	33¢ per 1,000 gals.
Next	50,000 "	30¢ " " "
"	100,000 "	25¢ " " "
Over	200,000 "	20¢ " " "

Annual Service Charges

⅝-inch meter	$5.00
¾-inch "	7.50
1-inch "	10.00
1½-inch "	20.00
2-inch "	30.00
3-inch "	60.00
4-inch "	80.00
6-inch "	100.00

Paterson, Passaic and Clifton

Quarterly Meter Rates

First	10,000 cu. ft.	$1.00 per 1,000 cu. ft.
Next	90,000 " "	90¢ " " " "
"	900,000 " "	70¢ " " " "
Over	1,000,000 " "	50¢ " " " "

Quarterly Fixed Service Charges

⅝-inch meter	$ 1.50
¾-inch "	2.50
1-inch "	5.50
1½-inch "	13.50

These GMC features mean

Low Running Expense

and greater truck profits

Gas; oil; tires;—these items of expense can make or break your truck profits. The GMC you buy today is the direct result of 24 years of successful truck building. And this long experience, plus General Motors unusual engineering and manufacturing facilities, has developed features which *reduce the running expense of GMCs to a point which is attractive to the operator.*

Engine

Each cylinder wall is a separate removable sleeve—accurately machined to even thickness. Expansion and contraction are therefore equal in all parts insuring a *continuous close-running fit of the pistons* and preventing loss of power.

Light weight pistons and connecting rods reduce fuel and oil consumption.

Unusually accurate valve action saves fuel.

GMC system of oil straining saves oil.

The plain tube carburetor, with its simple and easy adjustment insures real fuel economy.

GMC 2-Range Transmission

(Giving 9 different gear ratios)

Effects great fuel savings by allowing all work to be done with the engine operating at its highest efficiency. Also it saves tires because heavy loads can be started without jerking. An exclusive GMC feature on all models of 2½ tons and larger.

Rear Axle

Provided with radius rods to relieve springs of driving thrust. Springs absorb starting and driving torque, resulting in greater pulling ability and more tire mileage.

GMC TRUCKS
PRODUCT OF GENERAL MOTORS

Co.GMT Co—1926

Sold and Serviced Everywhere by Branches, Distributors and Dealers of

GENERAL MOTORS TRUCK COMPANY
Pontiac, Michigan
A DIVISION OF YELLOW TRUCK AND COACH MANUFACTURING COMPANY

GMC 1, 1½ and 2½ ton trucks — GMC Big Brute 3½ and 5 ton trucks
GMC Big Brute 4 to 15 ton Tractor Trucks — Yellow Cabs — Yellow Coaches
Yellow Light Delivery Trucks — Hertz Drivurself Cars

2-inch meter	18.00
3-inch "	45.00
4-inch "	60.00
6-inch "	120.00
8-inch "	190.00

Plainfield

Quarterly Meter Rates

First	10,000 cu. ft.	$1.75 per 1,000 cu. ft.
Next	90,000 " "	1.45 " " " "
"	900,000 " "	1.15 " " " "
Over	1,000,000 " "	85¢ " " " "

Quarterly Fixed Service Charges

½ or ⅝-inch meter	$ 1.50
¾-inch "	2.50
1-inch "	5.50
1¼-inch "	13.50
2-inch "	18.00
3-inch "	43.75
4-inch "	62.50
6-inch "	120.00
8-inch "	190.00
10-inch "	216.00
12-inch "	312.50
16-inch "	462.50

Bills for service through ½-inch, ⅝-inch and ¾-inch meters will be subject to a minimum charge of $12 per year.

Ridgewood

Quarterly Meter Rates

First	100,000 gals.	30¢ per 1,000 gals.
Next	100,000 "	25¢ " " "
"	100,000 "	20¢ " " "
Over	300,000 "	15¢ " " "

Quarterly Fixed Service Charges

½-inch meter	$1.50
¾-inch "	2.00
1-inch "	2.50
1¼-inch "	3.00
1½-inch "	3.50
2-inch "	4.00

NEW YORK

Amsterdam

Quarterly Meter Rates

First	40,000 cu. ft.	8¢ per 100 cu. ft.
Next	100,000 " "	5¢ " " " "
Over	140,000 " "	3¢ " " " "

Quarterly Minimum Charges

½ or ¾-inch meter	$2.00
1-inch "	3.00
1½-inch "	5.00
2-inch "	8.00
3-inch "	10.00
4-inch " or over	15.00

Catskill

Meter rate 10¢ per 100 cu. ft. Minimum rate $15 per year.

Service Charges

⅝-inch meter	$2.00
¾-inch "	2.00
1-inch "	2.40
1½-inch "	3.00
2-inch "	4.00
3-inch "	6.00
4-inch "	10.00

Little Falls

Quarterly Meter Rates

First	5,000 cu. ft.	14¢ per 100 cu. ft.
Next	20,000 " "	12¢ " " " "
"	20,000 " "	10¢ " " " "
"	20,000 " "	8¢ " " " "
"	20,000 " "	6¢ " " " "
"	15,000 " "	5¢ " " " "
Over	100,000 " "	4¢ " " " "

Annual Minimum Charges

⅝-inch meter	$10.00
¾-inch "	14.00
1-inch "	20.00
1½-inch "	40.00
2-inch "	70.00
3-inch "	150.00
4-inch "	250.00
6-inch "	500.00
8-inch "	800.00

Newburgh

Semi-Annual Meter Rates

First	15,000 gals.	Included in Minimum Charges
Next	35,000 "	20¢ per 1,000 gals.
"	450,000 "	16¢ " " "
"	2,000,000 "	12¢ " " "
"	2,500,000 "	10¢ " " "

Semi-Annual Minimum Charges

⅝-inch meter	$4.50
¾-inch "	6.00
1-inch "	9.00
1½-inch "	15.00
2-inch "	25.00
3-inch "	50.00
4-inch "	75.00
6-inch "	150.00

New Rochelle, North Pelham, Pelham Manor and Pelham

Quarterly Minimum Charges

⅝-inch meter	$2.40 for	750 cu. ft.
¾-inch "	4.80 "	1,500 " "
1-inch "	9.60 "	3,000 " "
2-inch "	32.00 "	10,000 " "
3-inch "	48.00 "	15,000 " "
4-inch "	64.00 "	20,000 " "
6-inch "	128.00 "	40,000 " "

Meter Rates for Excess

First	20,000 cu. ft.	32¢ per 100 cu. ft.
Next	20,000 " "	30¢ " " " "
"	20,000 " "	27½¢ " " " "
"	20,000 " "	25¢ " " " "
"	20,000 " "	22½¢ " " " "
Over	100,000 " "	20¢ " " " "

Scarsdale

Quarterly Meter Rates

First	10,000 cu. ft.	$2.80 per 1,000 cu. ft.
Next	90,000 " "	2.50 " " " "
"	100,000 " "	2.10 " " " "
Over	200,000 " "	1.75 " " " "

Quarterly Fixed Service Charges

⅝-inch meter	$2.00
¾-inch "	3.50
1-inch "	7.00
1½-inch "	18.00
2-inch "	24.00
4-inch "	84.00
6-inch "	158.00

Southampton

Meter Rates

First	15,000 cu. ft.	45¢ per 100 cu. ft.
Next	25,000 " "	35¢ " " " "
Over	40,000 " "	25¢ " " " "

Annual Minimum Charges

⅝-inch meter	$12.00
¾-inch "	20.00
1-inch "	30.00
1¼-inch "	40.00
1½-inch "	50.00
2-inch "	60.00

Tonawanda

Daily Meter Rates

First	10,000 gals.	10¢ per 1,000 gals.
Next	10,000 "	6¢ " " "
Over	20,000 "	4¢ " " "

Quarterly Fixed Service Charges

⅝-inch meter	$1.00
¾-inch "	1.75
1-inch "	3.50
1½-inch "	9.00
2-inch "	12.00
3-inch "	29.00
4-inch "	42.00
6-inch "	80.00
8-inch "	127.00

Tuckahoe, Bronxville and Eastchester

Quarterly Minimum Charges

⅝-inch meter	$3.20 for	1,000 cu. ft.
¾-inch "	6.40 "	2,000 " "
1-inch "	12.80 "	4,000 " "
2-inch "	48.00 "	15,000 " "
3-inch "	80.00 "	25,000 " "
4-inch "	96.00 "	30,000 " "
6-inch "	192.00 "	60,000 " "

Quarterly Meter Rates for Excess

First	20,000 cu. ft.	32¢ per 100 cu. ft.
Next	20,000 " "	30¢ " " " "
"	20,000 " "	27½¢ " " " "
"	20,000 " "	25¢ " " " "
Over	80,000 " "	22½¢ " " " "

NORTH CAROLINA

Henderson

Monthly Minimum Charges

½-inch meter	$1.40 for	400 cu. ft.
¾-inch "	1.75 "	500 " "
1-inch "	2.10 "	600 " "
1½-inch "	3.50 "	1,000 " "
2-inch "	4.20 "	1,200 " "

Monthly Meter Rates for Excess

400 to	4,000 cu. ft.	35¢ per 100 cu. ft.
Next	4,000 " "	30¢ " " " "
"	4,000 " "	25¢ " " " "
Over	12,000 " "	18¢ " " " "

NORTH DAKOTA

Harvey

Quarterly Meter Rates

First 8,000 gals.	$2.00
Next 25,000 "	15¢ per 1,000 gals.

Quarterly Service Charges

½-inch meter	50¢
¾-inch "	75¢

Truck Service Problems

Whether operating one truck or a fleet, service is a factor of prime importance in your business. Trucks must be kept busy and earning.

Performance has demonstrated the exceptional dependability of Graham Brothers trucks.

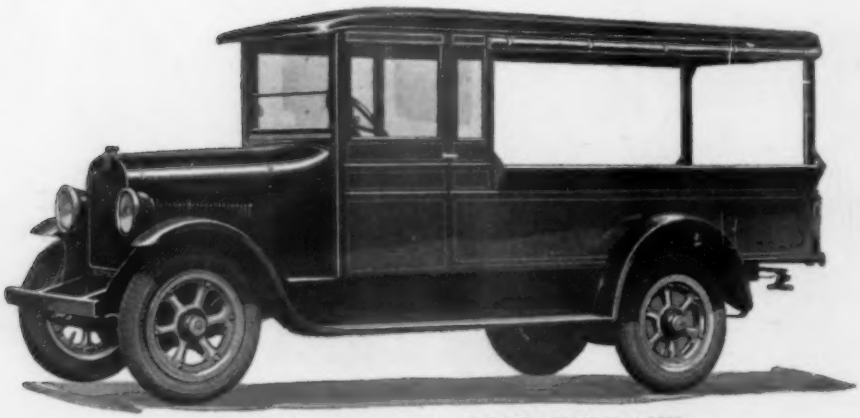
But when service is needed there is an experienced Dodge Brothers dealer near. The service is efficient. Shop well equipped. Men trained and experienced. Parts are obtainable at low cost without delay.

[*Graham Brothers Trucks, with Dodge Brothers ¾-Ton Commercial Cars, meet 90% of all haulage requirements.*]

1-Ton Chassis (G-BOY)	$ 885
1½-Ton Chassis - - -	1245
MBM Low Chassis - -	1295

f. o. b. Detroit

GRAHAM BROTHERS
Evansville – DETROIT – Stockton
A Division of Dodge Brothers, Inc.
Graham Brothers (Canada) Limited – Toronto, Ontario



CANOPY BODY MODEL M51, G-BOY 1-TON CHASSIS

GRAHAM BROTHERS TRUCKS

SOLD BY DODGE BROTHERS DEALERS EVERYWHERE

OHIO

Akron

Meter Rates

First 20,000 cu. ft.	$1.60 per 1,000 cu. ft.
Next 20,000 " "	1.50 " " " "
" 20,000 " "	1.40 " " " "
" 20,000 " "	1.30 " " " "
Over 80,000 " "	1.20 " " " "

Monthly Minimum Charges

⅝-inch meter	$1.20
¾-inch "	2.00
1-inch "	3.00
1½-inch "	4.00
2-inch "	5.00
3-inch "	7.00
4-inch "	10.00
6-inch "	15.00
8-inch "	25.00
10-inch "	40.00

Arcanum

Quarterly Minimum Charges

⅝-inch meter	$2.00 for 500 cu. ft.
1-inch "	4.00 " 1,000 " "
1½-inch "	12.00 " 2,000 " "

Excess, 10¢ per 100 cu. ft.

Canton

Meter Rates

First 20,000 cu ft	$1.00 per 1,000 cu ft
Next 20,000 " "	85¢ " " " "
Over 40,000 " "	75¢ " " " "

Quarterly Minimum Charges

⅝-inch meter	$2.50
¾-inch "	3.15
1-inch "	3.75
1¼-inch "	5.00
1½-inch "	6.25
2-inch "	7.50
3-inch "	12.50
4-inch "	17.50
6-inch "	31.25
8-inch "	37.50

Cleveland

Semi-Annual Minimum Charges

⅝-inch meter	$3.00
¾-inch "	7.50
1-inch "	9.00
1½-inch "	12.00
2-inch "	18.00
3-inch "	37.50
4-inch "	60.00
6-inch "	112.50
8-inch "	200.00

Meter Rates, 60¢ per 1,000 cu ft.

Dayton

Quarterly Minimum Charges
(Including 1,000 cu. ft.)

⅝-inch meter	$1.65
¾-inch "	1.90
1-inch "	2.40
1½-inch "	3.90
2-inch "	5.90
3-inch "	10.90
4-inch "	15.90
6-inch "	30.90
8-inch "	50.90

Quarterly Meter Rates

Next 9,000 cu. ft	90¢ per 1,000 cu. ft.
" 10,000 " "	75¢ " " " "
" 80,000 " "	60¢ " " " "
" 400,000 " "	50¢ " " " "
Over 500,000 " "	45¢ " " " "

Geneva

Quarterly Meter Rates

First 50,000 gals.	30¢ per 1,000 gals.
Next 100,000 "	22¢ " " "
Over 150,000 "	14¢ " " "

Annual Service Charges

⅝-inch meter	$5.00
¾-inch "	5.00
1-inch "	9.00
1½-inch "	12.00
2-inch "	24.00
3-inch "	36.00

London

Monthly Meter Rates

First 15,000 gals.	40¢ per 1,000 gals.
Next 15,000 "	35¢ " " "
Over 30,000 "	25¢ " " "

Monthly Minimum Charges

½ to ¾-inch meter	$1.00
1-inch "	2.00
1½-inch "	3.50
2-inch "	5.00

Lorain

Monthly Meter Rates

First 6,000 cu. ft.	20¢ per 100 cu. ft.
Next 12,000 " "	15¢ " " " "
Over 18,000 " "	9¢ " " " "

Monthly Service Charges

⅝-inch meter	$0.25
¾-inch "	.50
1-inch "	.75
1½-inch "	1.50
2-inch "	2.50
3-inch "	5.00
4-inch "	8.00
6-inch "	15.00

Troy

Meter Rates

First 1,500 cu. ft.	$2.00 Minimum
Next 3,500 " "	1.75 per 1,000 cu. ft.
" 5,000 " "	1.50 " " " "
" 10,000 " "	1.25 " " " "
Over 20,000 " "	.50 " " " "

Quarterly Minimum Charges

⅝-inch meter	$2.00
¾-inch "	3.00
1-inch "	5.00
1½-inch "	8.00
2-inch "	12.00

Warren

Monthly Meter Rates

First 800 cu. ft.	36¢ per 100 cu. ft.
Next 1,200 " "	30¢ " " " "
" 2,000 " "	24¢ " " " "
Over 4,000 " "	14.4¢ " " " "

Monthly Minimum Charges

⅝-inch meter	$1.08
¾-inch "	1.80
1-inch "	2.16
1½-inch "	3.00
2-inch "	3.84
3-inch "	5.04
4-inch "	6.60
6-inch "	9.00
8-inch "	12.00

OKLAHOMA

Tulsa

Meter Rates

First 15,000 gals.	35¢ per 1,000 gals.
Next 22,000 "	30¢ " " "
" 38,000 "	25¢ " " "
" 75,000 "	20¢ " " "
" 100,000 "	15¢ " " "
Over 250,000 "	15¢ " " "

Monthly Minimum Charges

¾-inch meter	$0.75
1-inch "	1.25
1½-inch "	1.75
2-inch "	2.50
Over 2-inch "	3.00

OREGON

Bend

Monthly Meter Rates

First 200 cu. ft.	$1.60
Next 300 " "	25¢ per 100 cu. ft.
" 1,500 " "	11¢ " " " "
" 8,000 " "	8¢ " " " "
Over 10,000 " "	6¢ " " " "

Monthly Minimum Charges

⅝-inch meter	$1.60
¾-inch "	2.00
1-inch "	3.00
1½-inch "	4.50
2-inch "	8.00
3-inch "	13.50
4-inch "	21.00

Corvallis

Monthly Meter Rates

First 5,000 gals.	30¢ per 1,000 gals.
Next 45,000 "	20¢ " " "
Over 50,000 "	15¢ " " "

Monthly Minimum Charges

½ or ¾-inch meter	$1.50
1-inch "	2.00
1½-inch "	2.50
2-inch "	3.50
3-inch "	5.00

PENNSYLVANIA

Allentown

Monthly Meter Rates

First 200 cu. ft.	80¢ per 100 cu. ft.
Next 100 " "	30¢ " " " "
" 200 " "	24¢ " " " "
" 500 " "	20¢ " " " "
" 1,000 " "	16¢ " " " "
" 1,000 " "	14¢ " " " "
" 2,000 " "	12¢ " " " "
" 5,000 " "	11¢ " " " "
" 10,000 " "	10¢ " " " "
" 10,000 " "	9¢ " " " "
" 30,000 " "	8¢ " " " "
" 40,000 " "	7¢ " " " "
Over 100,000 " "	6¢ " " " "

Less 50 per cent if paid in 15 days

Budd-Michelin Dual Wheels stop the rumbles that cause grumbles

◆

EVERY truck owner knows that noise in the motor, the clutch, the gears—means trouble.

But what about the noise of the *whole* truck as it rumbles over the roads? That means trouble, too! It means jolting and jouncing of the truck and its load—excessive vibration, *wear!*

It means a shorter life for the truck—and the road. It means frequent repair bills and cargo breakage. It means that the truck needs a cushion of *air*—Budd-Michelin Dual Wheels and *pneumatic* tires.

Budd-Michelin Duals enable heavy trucks to glide along quietly, smoothly, with passenger-car ease. They give heavy trucks speed with safety, lower maintenance costs, and make them adaptable to wider fields of transportation.

Over 50,000 heavy buses and trucks on Budd-Michelin Duals get from 15,000 to 20,000 miles from a set of tires.

Thousands of truck owners who have put their trucks on Duals are getting the same tire-mileage. They're paying less upkeep, covering routes in shorter time, getting less cargo breakage and buying less gas and oil.

All truck manufacturers will supply any new job Dual equipped—and any truck can be converted. Ask your dealer—or write us.

BUDD

WHEEL COMPANY

Detroit

The Budd-Michelin equipment—two Budd-Michelin single wheels in front, two Budd-Michelin Dual Wheels in the rear (pairs of single wheels acting together as units). All wheels completely interchangeable either as units or as halves of Duals. One spare.

MONTHLY METER RATES

⅝-inch meter	6¢
1-inch "	8¢
1½-inch "	15¢
2-inch "	25¢
3-inch "	50¢

Apollo

QUARTERLY METER RENTAL

First	1,000 cu. ft.	50¢ per 100 cu. ft.
Next	2,000 " "	40¢ " " " "
"	7,000 " "	30¢ " " " "
Over	10,000 " "	12¢ " " " "

QUARTERLY MINIMUM CHARGES

⅝-inch meter	$5.00
¾-inch "	7.50
1-inch "	12.00
1½-inch "	24.00
2-inch "	40.00
3-inch "	70.00
4-inch "	100.00

Centralia

MONTHLY MINIMUM CHARGES

⅝-inch meter	$0.62	for	300 gals.
¾-inch "	1.00	"	500 "
1-inch "	1.55	"	750 "
1½-inch "	2.85	"	1,500 "
2-inch "	4.40	"	2,250 "
3-inch "	7.85	"	4,000 "
4-inch "	14.50	"	7,500 "
6-inch "	25.40	"	13,500 "

MONTHLY METER RATES

Above to	15,000 gals.	40¢ per 1,000 gals.
Next	150,000	25¢ " " "
Over	165,000	14¢ " " "

Downingtown

METER RATES
Based on Total Amount Used per Quarter

First	8,000 gals.	25¢ per 1,000 gals.
Over	8,000 "	20¢ " " "
"	20,000 "	18¢ " " "
"	40,000 "	16¢ " " "
"	60,000 "	14¢ " " "
"	100,000 "	12¢ " " "
"	200,000 "	10¢ " " "
"	500,000 "	9¢ " " "

ANNUAL MINIMUM CHARGES

⅝-inch meter	$8.00
¾-inch "	12.00
1-inch "	16.00
1½-inch "	28.00
2-inch "	60.00

Emporium

QUARTERLY METER RATES

First	4,000 cu. ft.	60¢ per 100 cu. ft.
Next	40,000 " "	40¢ " " " "
Over	44,000 " "	20¢ " " " "

QUARTERLY MINIMUM CHARGES

½ or ⅝-inch meter serving one fixture	$3.00
½ or ⅝-inch meter serving more than one fixture	4.50
¾-inch meter	6.00
1-inch "	10.00
1½-inch "	15.00
2-inch "	25.00
3-inch "	45.00
4-inch "	90.00

Erie

QUARTERLY METER RATES

First	25,000 gals.	20¢ per 1,000 gals.
Over	25,000 "	4¢ " " "

QUARTERLY MINIMUM CHARGES

¾-inch meter	$3.75
1-inch "	4.50
1½-inch "	6.25
2-inch "	10.00
3-inch "	18.75
4-inch "	38.75
6-inch "	100.00

Freeport

QUARTERLY METER RATES

First	12,500 gals.	45¢ per 1,000 gals.
Next	50,000 "	32¢ " " "
"	3,687,500 "	18¢ " " "
Over	3,750,000 "	10¢ " " "

QUARTERLY SERVICE CHARGES

½ or ⅝-inch meter	$2.00
¾-inch "	3.00
1-inch "	4.50
1½-inch "	6.00
2-inch "	12.00
3-inch "	18.00
4-inch "	30.00
6-inch "	60.00

Harrisburg

METER RATE
43¢ per 1,000 cu. ft.

ANNUAL "READY-TO-SERVE" CHARGE

½ or ⅝-inch meter	$4.00
¾-inch "	5.00
1-inch "	10.00
1¼-inch meter	15.00
1½-inch "	22.00
2-inch "	40.00
3-inch "	90.00
4-inch "	160.00
6-inch "	360.00
8-inch "	640.00
10-inch "	1,000.00
12-inch "	1,440.00

Hazleton and W. Hazleton

MONTHLY METER RATES

First	5,000 gals.	35¢ per 1,000 gals.
Next	50,000 "	24¢ " " "
Over	55,000 "	13¢ " " "

MONTHLY MINIMUM CHARGES

⅝-inch meter	$0.75	for	700 gals.
¾-inch "	1.15	"	1,000 "
1-inch "	2.00	"	2,000 "
1½-inch "	4.00	"	4,000 "

MONTHLY MINIMUM CHARGES

For Detector Meters and Meters over 1½-inch, no water included.

2-inch meter	$5.00
3-inch "	7.50
4-inch "	10.00
6-inch "	15.00
8-inch "	20.00

Hughesville

QUARTERLY METER RATES

First	10,000 gals.	30¢ per 1,000 gals.
Next	10,000 "	25¢ " " "
"	15,000 "	20¢ " " "
"	15,000 "	18¢ " " "
"	25,000 "	16¢ " " "
"	25,000 "	14¢ " " "
"	50,000 "	13¢ " " "
"	50,000 "	12¢ " " "
"	100,000 "	11¢ " " "
"	100,000 "	10¢ " " "
"	150,000 "	8¢ " " "
"	200,000 "	6¢ " " "

QUARTERLY MINIMUM CHARGES

¾ or 1-inch meter	$5.00
1¼ or 1½-inch "	7.50
2 or 3-inch "	10.00
4-inch "	15.00
6-inch "	20.00

Leechburg

QUARTERLY METER RATES

First	1,000 cu. ft.	50¢ per 100 cu. ft.
Next	2,000 " "	40¢ " " " "
"	7,000 " "	30¢ " " " "
Over	10,000 " "	12¢ " " " "

QUARTERLY MINIMUM CHARGES

⅝-inch meter	$5.00
¾-inch "	7.50
1-inch "	12.00
1½-inch "	24.00
2-inch "	40.00
3-inch "	70.00
4-inch "	100.00

Montrose

MONTHLY METER RATES

First	4,000 gals.	50¢ per 1,000 gals.
Next	6,000 "	30¢ " " "
"	40,000 "	25¢ " " "
"	50,000 "	20¢ " " "
"	100,000 "	14¢ " " "
"	100,000 "	11¢ " " "
"	100,000 "	9¢ " " "
"	100,000 "	8¢ " " "
Over	500,000 "	6¢ " " "

MONTHLY MINIMUM CHARGES

½-inch meter	$2.00
⅝-inch "	2.00
¾-inch "	2.50
1-inch "	3.00
1¼-inch "	3.50
1½-inch "	3.50
2-inch "	4.00
3-inch "	6.00
4-inch "	10.00
6-inch "	15.00

New Kensington, Arnold and Parnassus

QUARTERLY METER RATES

First	1,500 cu. ft.	$3.25
Next	10,000 " "	20¢ per 100 cu. ft.
"	20,000 " "	18¢ " " " "
"	20,000 " "	15¢ " " " "
"	20,000 " "	12¢ " " " "
"	200,000 " "	10¢ " " " "
"	200,000 " "	8¢ " " " "
"	200,000 " "	6¢ " " " "
"	200,000 " "	5¢ " " " "
Over	871,500 " "	4½¢ " " " "

QUARTERLY MINIMUM CHARGES

½ or ⅝-inch meter	$3.25
¾-inch "	4.50
1-inch "	6.00

22 years of heavy traffic!

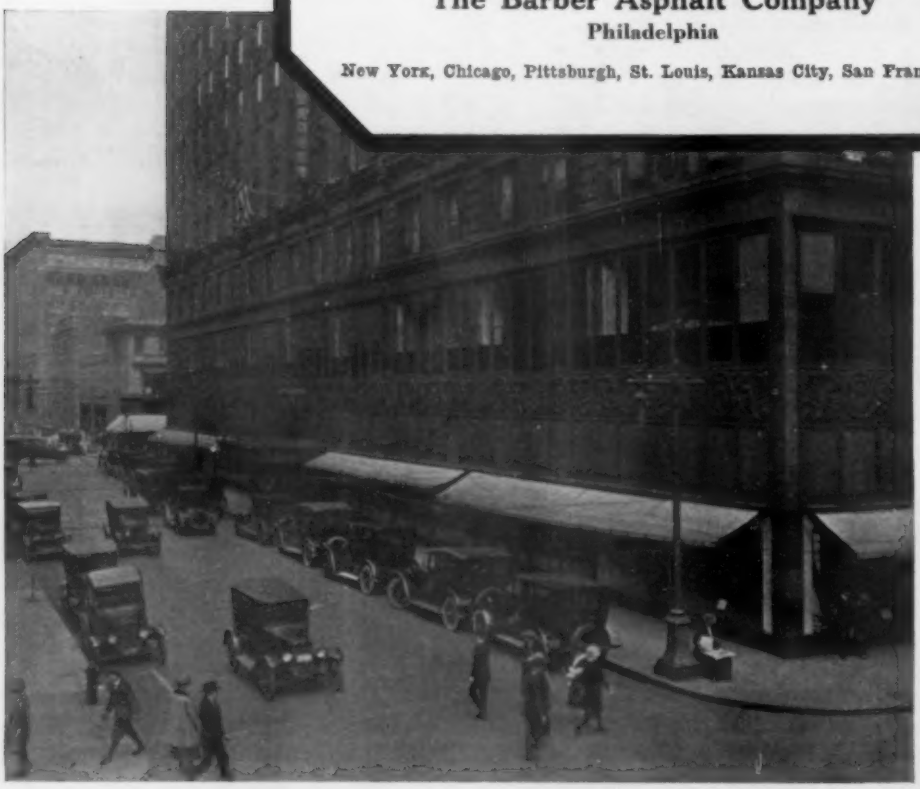
Tenth Street is one of the heaviest arteries of traffic in St. Louis, Mo.—and affords one of the severest tests to which any pavement could be subjected. Trinidad Native-Lake Asphalt was laid in 1904 and has given 22 years of service with *practically no cost for maintenance.*

Nor is this an unusual instance—for other Trinidad pavements have been in use double that time—and everywhere the long life of this nature-made product, its attractiveness, its freedom from noise, the ease of keeping it clean, are always fully demonstrated.

We also supply Bermudez Road Asphalt for *road* building. Write for interesting data.

The Barber Asphalt Company
Philadelphia

New York, Chicago, Pittsburgh, St. Louis, Kansas City, San Francisco



TRINIDAD LAKE ASPHALT

1¼-inch meter	9.00
1½-inch "	12.00
2-inch "	24.00
3-inch "	50.00
4-inch "	100.00
6-inch "	150.00
8-inch "	200.00

Norristown

Quarterly Meter Rates

First 5,000 cu. ft.	30¢ per 100 cu. ft.
Next 30,000 " "	12¢ " " " "
" 100,000 " "	8¢ " " " "
Over 135,000 " "	6¢ " " " "

Annual Minimum Charges

½-inch meter	$15.00
⅝-inch "	15.00
¾-inch "	25.00
1-inch "	35.00
1½-inch "	60.00
2-inch "	80.00
3-inch "	120.00
4-inch "	160.00
6-inch "	240.00
8-inch "	400.00

Northumberland

Monthly Meter Rates

First 10,000 gals.	40¢ per 1,000 gals.
Next 40,000 "	15¢ " " "
" 150,000 "	13¢ " " "
" 300,000 "	12¢ " " "
" 500,000 "	10¢ " " "
" 1,000,000 "	9¢ " " "
" 1,000,000 "	8¢ " " "
" 3,000,000 "	7¢ " " "
" 4,000,000 "	6¢ " " "
" 10,000,000 "	5¢ " " "

Monthly Minimum Charges

1-inch meter	$1.00
2-inch "	4.00
3-inch "	9.00
4-inch "	16.00
6-inch "	36.00
8-inch "	64.00
10-inch "	100.00

Reynoldsville

Quarterly Meter Rates

First 10,000 gals.	18¢ per 1,000 gals.
Next 10,000 "	17¢ " " "
" 10,000 "	15¢ " " "
" 10,000 "	13¢ " " "
" 10,000 "	12¢ " " "
" 10,000 "	11¢ " " "
" 10,000 "	10¢ " " "
" 10,000 "	9¢ " " "
" 20,000 "	8¢ " " "
Over 100,000 "	7¢ " " "

Quarterly Service Charges

½-inch meter	$1.50
¾-inch "	2.25
1-inch "	3.00
1½-inch "	3.75
2-inch "	4.50

Shenandoah

Monthly Meter Rates

First 2,000 gals.	50¢ per 1,000 gals.
Over 2,000 "	25¢ " " "

Annual Service Charges

½ or ⅝-inch meter	$6.00
¾-inch "	12.00
1-inch "	18.00
1½-inch "	42.00
2-inch "	72.00
3-inch "	162.00
4-inch "	288.00
6-inch "	648.00
8-inch "	1,152.00
Monthly Minimum Charge	1.00

Summit Hill

Quarterly Meter Rates

First 15,000 gals.	65¢ per 1,000 gals.
Next 35,000 "	45¢ " " "
Over 50,000 "	35¢ " " "

Quarterly Minimum Charges

½-inch meter	$1.50
¾-inch "	1.50
1-inch "	2.25
1¼-inch "	2.60
1½-inch "	3.00
2-inch "	4.50
3-inch "	7.50
4-inch "	12.00

Waynesboro

Quarterly Meter Rates

First 12,000 gals.	30¢ per 1,000 gals.
Next 24,000 "	20¢ " " "
" 48,000 "	15¢ " " "
" 120,000 "	10¢ " " "
" 297,000 "	8¢ " " "
Over 501,000 "	7¢ " " "

Meter rental charges will be made for meters in excess of one, the rentals for the first or largest meter being included in the minimum charges:

	Monthly Minimum Charges	Rental
⅝-inch meter	$1.00	$0.50
¾-inch "	1.50	.60
1-inch "	2.00	.75
1½-inch "	3.00	1.00
2-inch "	4.00	1.25
3-inch "	8.00	1.50
4-inch "	15.00	2.50
6-inch "	27.50	4.00

SOUTH CAROLINA

Charleston

Quarterly Meter Rates

First 10,000 cu. ft.	$1.85 per 1,000 cu. ft.
Next 20,000 " "	1.70 " " " "
" 70,000 " "	1.50 " " " "
" 200,000 " "	1.30 " " " "
" 700,000 " "	1.10 " " " "
" 1,500,000 " "	.95 " " " "
" 3,500,000 " "	.75 " " " "
" 6,000,000 " "	.55 " " " "
Over 12,000,000 " "	.45 " " " "

Quarterly Minimum Charges

¾-inch meter	$3.00 for	1,622 cu. ft.
1-inch "	5.00 "	2,700 " "
1½-inch "	12.50 "	6,760 " "
2-inch "	25.00 "	13,820 " "
3-inch "	50.00 "	28,520 " "
4-inch "	150.00 "	95,000 " "
6-inch "	250.00 "	171,154 " "
8-inch "	500.00 "	375,000 " "

Spartanburg

Monthly Meter Rates

First 20,000 gals.	37½¢ per 1,000 gals.
Next 30,000 "	20¢ " " "
" 150,000 "	25¢ " " "
" 250,000 "	20¢ " " "
" 350,000 "	15¢ " " "
" 1,200,000 "	14¢ " " "
" 5,000,000 "	13½¢ " " "
" 10,000,000 "	13¢ " " "
Over 17,000,000 "	12¢ " " "

Monthly Minimum Charges

⅝-inch meter	$0.83 for	2,240 gals.
¾-inch "	1.25 "	3,300 "
1-inch "	2.00 "	5,334 "
1½-inch "	4.00 "	10,666 "
2-inch "	6.00 "	16,000 "
3-inch "	16.50 "	50,000 "
4-inch "	54.00 "	200,000 "
6-inch "	104.00 "	450,000 "
8-inch "	156.50 "	880,000 "

TENNESSEE

Chattanooga

Monthly Meter Rates

First 50,000 gals.	25¢ per 1,000 gals
Next 50,000 "	20¢ " " "
" 100,000 "	17¢ " " "
" 250,000 "	15¢ " " "
" 300,000 "	12¢ " " "
" 500,000 "	10¢ " " "
" 750,000 "	9¢ " " "
" 1,000,000 "	8¢ " " "
Over 3,000,000 "	5¢ " " "

Monthly Minimum Charges

½-inch meter	$0.75
¾-inch "	1.70
1-inch "	3.00
1½-inch "	6.75
2-inch "	12.00
3-inch "	27.00
4-inch "	48.00
6-inch "	108.00

Kingsport

Monthly Meter Rates

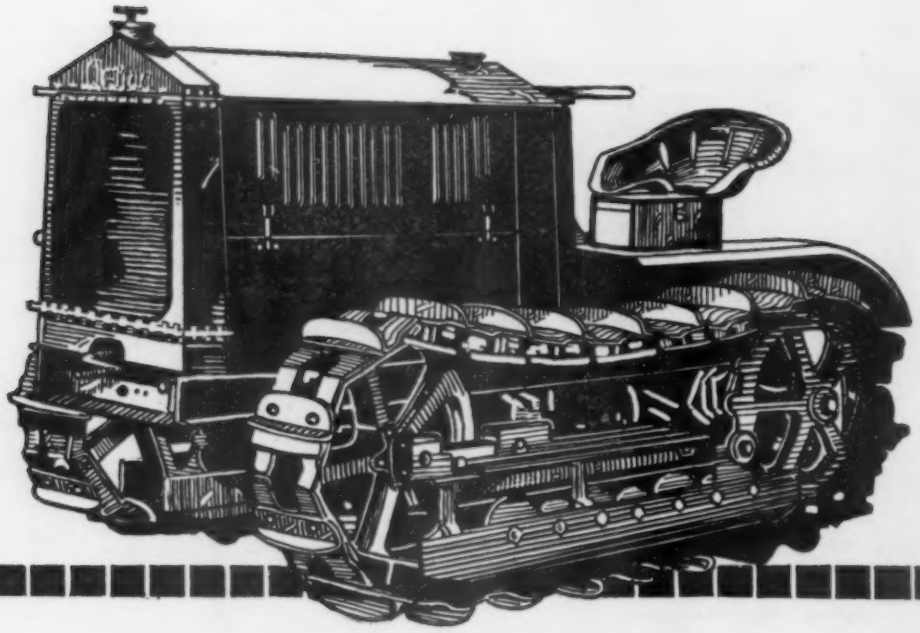
First 30,000 gals.	30¢ per 1,000 gals.
Next 30,000 "	25¢ " " "
" 30,000 "	20¢ " " "
" 60,000 "	15¢ " " "
" 150,000 "	10¢ " " "
" 150,000 "	8¢ " " "
" 150,000 "	6¢ " " "
Balance	4¢ " " "

Monthly Minimum Charges

⅝-inch meter	$1.00
2-inch "	2.50
4-inch "	10.00
6-inch "	25.00
8-inch "	40.00

Knoxville

All bills not paid within ten days from date of bill will be taxed with a penalty. Minimum 400 cu. ft. or less, $1.00, penalty 25¢.



Two Big Announcements

NOW EFFECTIVE!
$100.00
Price Reduction on Model K Cletrac

MODEL "K", the 3-plow Cletrac Crawler Tractor was added to the Cletrac line one year ago. The response from road contractors and state highway departments was immediate. This powerful tractor won instant favor everywhere—because it offered what was unquestionably the greatest improvement in tractor design and construction that had taken place in the past ten years.

With steadily increasing production a price reduction of $100 has been made possible. Investigate this better tractor at once. Write for name of nearest distributor and descriptive literature.

NOW READY!
Model "A" Cletrac
30-45 H.P.

MODEL "A", the largest Cletrac Crawler Tractor—built to meet unusual power requirements and particularly for road construction and general industrial service—is now ready. Six-cylinder motor—30 H.P. at draw-bar—45 H.P. at power pulley. Simple, powerful, dependable—a duplicate in design of the successful Model "K", built in larger size and with corresponding increase of power and capacity. Write for full details.

Cletrac Crawler Tractors

The Cleveland Tractor Co.
Cleveland, Ohio

When writing to Advertisers please mention THE AMERICAN CITY—Thank you.

METER RATES

	Rate	Penalty
First 4,000 cu. ft.	25¢ per 100 cu. ft.	30¢
Next 6,000 " "	22½¢ " " " "	10% of bill
" 10,000 " "	14¢ " " " "	" " "
" 10,000 " "	13¢ " " " "	" " "
" 10,000 " "	12¢ " " " "	" " "
" 10,000 " "	11¢ " " " "	" " "
" 20,000 " "	10¢ " " " "	" " "
Over 70,000 " "	9¢ " " " "	" " "

MONTHLY METER RENTALS

⅝-inch meter	$0.15
¾-inch "	.25
1-inch "	.33
1½-inch "	.50
2-inch "	.67
3-inch "	1.33
4-inch "	2.67
6-inch "	5.33

TEXAS

El Paso

The minimum monthly charge of $1.00 for all meters under one-inch shall pay for 600 cubic feet. For meters one-inch or larger the following monthly minimum charges shall be made and shall pay for corresponding amounts of water at a rate of 16⅔¢ per 100 cu. ft.

1-inch meter	$2.00
1½-inch "	3.00
2-inch "	5.00
3-inch "	7.50
4-inch "	10.00
6-inch "	20.00

METER RATES

First 13,300 cu. ft.	16⅔¢ per 100 cu. ft.
Next 13,300 " "	15¢ " " " "
" 13,300 " "	13½¢ " " " "
" 13,300 " "	12¢ " " " "
" 80,000 " "	11¼¢ " " " "
Over 133,000 " "	10½¢ " " " "

Port Arthur

METER RATES

First 5,000 gals.	30¢ per 1,000 gals.
Next 5,000 "	25¢ " " "
" 40,000 "	20¢ " " "
" 950,000 "	15¢ " " "
" 4,000,000 "	13¢ " " "

MONTHLY METER RENTALS

⅝-inch meter	$0.20
¾-inch "	.30
1-inch "	.45
1½-inch "	.80
2-inch "	1.20
3-inch "	1.75
2-inch compound meter	1.30
3-inch " "	2.10
4-inch " "	3.55

VIRGINIA

Alexandria

MONTHLY METER RATES

First 3,333⅓ gals.	$1.00 Minimum
Next 6,666⅔ "	30¢ per 1,000 gals.
" 10,000 "	25¢ " " "
" 20,000 "	20¢ " " "
" 40,000 "	15¢ " " "
" 80,000 "	12¢ " " "
" 160,000 "	10¢ " " "
Over 320,000 "	8¢ " " "

ANNUAL READINESS-TO-SERVE AND METER RENTAL CHARGES

⅝-inch meter	$3.00
¾-inch "	3.60
1-inch "	4.20
1½-inch "	5.40
2-inch "	7.20
3-inch "	12.00
4-inch "	18.00
6-inch "	36.00

Lynchburg

MONTHLY METER RATES

First 560 cu. ft.	$1.00
Next 2,440 " "	1.80 per 1,000 cu. ft.
" 7,000 " "	1.50 " " " "
" 10,000 " "	1.20 " " " "
" 20,000 " "	90¢ " " " "
" 30,000 " "	75¢ " " " "
Over 70,000 " "	60¢ " " " "

MONTHLY SERVICE CHARGES

⅝-inch meter	$1.00
¾-inch "	1.50
1-inch "	2.00
1¼-inch "	2.50
1½-inch "	3.00
2-inch "	6.00
3-inch "	11.00
4-inch "	22.00
6-inch "	45.00

Norfolk

QUARTERLY METER RATES

First 300,000 gals.	25¢ per 1,000 gals.
Next 900,000 "	15¢ " " "
Over 1,200,000 "	8¢ " " "

ANNUAL SERVICE CHARGE

⅝-inch meter	$6.00
¾-inch "	8.00
1-inch "	16.00
1½-inch "	36.00
2-inch "	50.00
3-inch "	100.00
4-inch "	180.00
6-inch "	400.00
8-inch "	800.00

Radford

DOMESTIC METER RATES

First 2,000 gals.	40¢ per 1,000 gals.
Next 3,000 "	35¢ " " "
" 10,000 "	30¢ " " "
Over 15,000 "	25¢ " " "

COMMERCIAL METER RATES

First 15,000 gals.	25¢ per 1,000 gals.
Next 20,000 "	20¢ " " "
" 65,000 "	15¢ " " "
Over 100,000 "	15¢ " " "

MONTHLY SERVICE CHARGES

½-inch meter	$0.20
⅝-inch "	.20
¾-inch "	.20
1-inch "	.50
1½-inch "	.75
2-inch "	1.00

WASHINGTON

Everett

MONTHLY METER RATES

First 1,200 cu. ft.	25¢ per 100 cu. ft.
Next 2,300 " "	18¢ " " " "
" 1,500 " "	15¢ " " " "
" 1,000 " "	12¢ " " " "
" 1,000 " "	11¢ " " " "
" 1,000 " "	10¢ " " " "
" 1,000 " "	9¢ " " " "
" 1,000 " "	8¢ " " " "
" 180,000 " "	5.3¢ " " " "
" 60,000 " "	4.6¢ " " " "
Over 250,000 " "	3.75¢ " " " "

MONTHLY MINIMUM CHARGES

½ to 1¼-inch meters	$2.00
2 to 2¾-inch "	3.00
3-inch "	4.00
4-inch "	5.00
6-inch "	6.00

Tacoma

METER RATES

First 5,000 cu. ft.	10¢ per 100 cu. ft.
Next 25,000 " "	6¢ " " " "
Over 30,000 " "	4¢ " " " "

MONTHLY READY-TO-SERVE CHARGE

½ to ¾-inch meters	$0.50
¾-inch "	.75
1-inch "	1.50
1½-inch "	3.00
2-inch "	5.00
3-inch "	10.00
4-inch "	15.00
6-inch "	30.00
8-inch "	50.00
10-inch "	90.00
12-inch "	130.00

Vancouver

MONTHLY DOMESTIC METER RATES

First 25,000 gals.	30¢ per 1,000 gals.
Next 25,000 "	20¢ " " "
" 50,000 "	15¢ " " "
" 100,000 "	12½¢ " " "
Over 200,000 "	10¢ " " "

INDUSTRIAL METER RATES

First 3,500 cu. ft.	22¢ per 100 cu. ft.
Next 3,500 " "	15¢ " " " "
" 7,000 " "	11¢ " " " "
" 14,000 " "	7¢ " " " "
Over 28,000 " "	2½¢ " " " "

MONTHLY MINIMUM CHARGES

½ to ¾-inch meters	$1.00
1-inch "	1.75
1¼ to 2-inch "	2.00
2½ to 3-inch "	3.50
3½-inch "	or over per inch or fraction in diam. 1.50

WEST VIRGINIA

Fairmont

MONTHLY METER RATES

First 25,000 gals.	40¢ per 1,000 gals
Next 25,000 "	35¢ " " "
" 25,000 "	30¢ " " "
" 25,000 "	25¢ " " "
" 25,000 "	20¢ " " "
" 25,000 "	15¢ " " "
Over 150,000 "	12½¢ " " "

MONTHLY MINIMUM CHARGES

⅝-inch meters	$1.00
¾-inch "	2.00
1-inch "	3.50
1¼-inch "	10.00

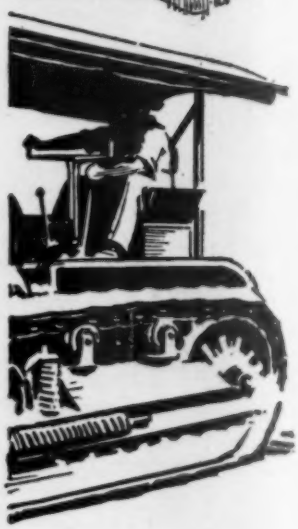
In his Annual Report to Stockholders of the Caterpillar Tractor Co., its President made this statement on December 31, 1925:

"Your management is gratified to report good progress in the matter of co-ordinating the manufacturing facilities at various plants, with consequent substantial economies, justifying the belief that its determination to make a better product at a less cost to the user is a realizable ambition."

The Promise of Lower Prices is Fulfilled —

REDUCED PRICES
Effective June 15, 1926

	Former Prices	New Prices	
Sixty	$5500	$5000	F. O. B. San Leandro or Peoria
5-Ton	$3600	$3250	F. O. B. Peoria
Thirty	$3400	$3000	F. O. B. San Leandro
2-Ton	$1950	$1850	F. O. B. Peoria



Lower Prices resulting from the consolidation in the Caterpillar Tractor Co. of the resources of its predecessor companies—the fulfillment of a pledge to pass on to purchasers the advantages of the new organization;

Lower Prices—the logical result of savings in manufacturing costs and other economies of combined equipment and personnel;

Lower Prices resulting from increased production;

Lower Prices to invite new users in new fields and old and to cut the costs of "Caterpillar" performance;

And better tractors, that result from the team-work of skilled engineers, improved production equipment and watchful experiment in factory and field.

There's a "Caterpillar" Tractor Dealer near you

CATERPILLAR TRACTOR CO.

Executive Offices: San Leandro, California, U. S. A.
Factories: Peoria, Illinois - San Leandro, California
New York Office: 50 Church Street

Successor to

BEST C. L. Best Tractor Co. — The Holt Manufacturing Company HOLT

Better
Quicker
Cheaper

65-426 (1)

CATERPILLAR
REG. U.S. PAT. OFF.

1½-inch meter	15.00
2-inch "	25.00
3-inch "	50.00
4-inch "	125.00
6-inch "	200.00

Moundsville

Monthly Meter Rates

First	10,000 gals.	40¢ per 1,000 gals.
Next	20,000 "	30¢ " " "
"	30,000 "	20¢ " " "
"	40,000 "	15¢ " " "
"	200,000 "	13¢ " " "
"	700,000 "	10¢ " " "
Over	1,000,000 "	8¢ " " "

Monthly Minimum Charges

¾-inch meter	$0.75
1-inch "	1.00
1-inch "	2.00
2-inch "	5.00
3-inch "	7.00
4-inch "	10.00
6-inch "	15.00
8-inch "	20.00

WISCONSIN

Appleton

Quarterly Meter Rates

First	500 cu. ft.	23¢ per 100 cu. ft.
Next	500 " "	22¢ " " "
"	3,000 " "	20¢ " " "
"	6,000 " "	18¢ " " "
"	40,000 " "	16¢ " " "
"	50,000 " "	13¢ " " "
"	50,000 " "	11¢ " " "
"	150,000 " "	8¢ " " "
"	200,000 " "	6¢ " " "
"	500,000 " "	5¢ " " "
"	1,000,000 " "	3¢ " " "

Quarterly Service Charges

⅝-inch meter	$1.20
¾-inch "	1.80
1-inch "	2.70
1½-inch "	3.60
2-inch "	6.00
2½-inch "	7.50
3-inch "	9.00
4-inch "	13.50
6-inch "	16.50
8-inch "	25.50

Ashland

Monthly Meter Rates

First	12,500 cu. ft.	21½¢ per 100 cu. ft.
Next	37,500 " "	14½¢ " " "
Over	50,000 " "	12¢ " " "

Annual Service Charges

½ or ⅝-inch meter	$14.40
¾-inch "	21.60
1-inch "	36.00
1½-inch "	50.40
2-inch "	81.60
3-inch "	144.00
4-inch "	259.20
6-inch "	432.00

Brillion

Quarterly Meter Rates

First	4,000 gals.	Minimum Charge below
Next	16,000 "	40¢ per 1,000 gals.
"	20,000 "	30¢ " " "
"	30,000 "	20¢ " " "
Over	70,000 "	15¢ " " "

Quarterly Minimum Charges

⅝-inch meter	$2.50
¾-inch "	3.00
1-inch "	4.00
1¼-inch "	5.00
1½-inch "	6.00
2-inch "	7.00

Cedarburg

Quarterly Meter Rates

First	5,000 gals.	35¢ per 1,000 gals.
Next	5,000 "	30¢ " " "
"	10,000 "	25¢ " " "
"	20,000 "	20¢ " " "
Over	40,000 "	15¢ " " "

Quarterly Service Charges

⅝-inch meter	$0.75
¾-inch "	.90
1-inch "	1.00
1½-inch "	1.50
2-inch "	2.00
3-inch "	3.00
4-inch "	5.00
6-inch "	10.00

Evansville

Quarterly Meter Rates

		Gross	Net
First	500 cu. ft.	20¢ per 100 cu. ft.	18¢
Next	1,500 " "	17¢ " " "	15¢
"	5,000 " "	14¢ " " "	12¢
Over	7,000 " "	10¢ " " "	8¢

Quarterly Service Charges

	Gross	Net
½ or ⅝-inch meter	$1.00	$0.75
¾-inch "	1.25	1.00
1-inch "	1.75	1.50
1½-inch "	3.00	2.50
2-inch "	5.00	4.00
3-inch "	7.50	6.00
4-inch "	12.00	10.00

For each additional consumer on the same meter, the service charges shall be increased 50 cents per consumer. The difference between the gross and net rates shall constitute a discount for prompt payment.

Green Bay

Quarterly Meter Rates

First	500 cu. ft.	24¢ per 100 cu. ft.
Next	1,500 " "	22¢ " " "
"	1,000 " "	20¢ " " "
"	7,000 " "	18¢ " " "
"	15,000 " "	14¢ " " "
"	25,000 " "	12¢ " " "
"	25,000 " "	10¢ " " "
"	25,000 " "	8¢ " " "
Over	100,000 " "	5¢ " " "

Quarterly Service Charges

⅝-inch meter	$1.25
¾-inch "	2.00
1-inch "	2.50
1½-inch "	4.00
2-inch "	7.50
3-inch "	12.00
4-inch "	15.00
6-inch "	18.75
8-inch "	31.25

For each additional consumer on one meter 50 cents per quarter is charged.

Janesville

Quarterly Meter Rates

First	1,000 cu. ft.	Minimum charge
Next	9,000 " "	15¢ per 100 cu. ft.
"	40,000 " "	12¢ " " "
"	50,000 " "	10¢ " " "
"	100,000 " "	5¢ " " "
"	700,000 " "	3¢ " " "
Over	900,000 " "	2¢ " " "

Quarterly Minimum Charges

⅝-inch meter	$1.75
¾-inch "	2.00
1-inch "	2.25
1½-inch "	3.00
2-inch "	4.00
4-inch "	12.00
6-inch "	18.75
8-inch "	25.00
10-inch "	37.50
12-inch "	50.00

Kaukauna

Quarterly Meter Rates

First	1,330 cu. ft.	22½¢ per 100 cu. ft.
Next	2,660 " "	20¢ " " "
"	6,650 " "	15¢ " " "
"	39,900 " "	12½¢ " " "
"	39,900 " "	10½¢ " " "
Over	90,440 " "	7¢ " " "

Quarterly Minimum Charges

⅝-inch meter	$1.25
¾-inch "	2.50
1-inch "	5.00
1¼-inch "	7.50
1½-inch "	10.00
2-inch "	15.00

Neenah

Quarterly Meter Rates

First	9,000 gals.	30¢ per 1,000 gals.
Next	36,000 "	24¢ " " "
Over	45,000 "	16¢ " " "

Quarterly Service Charges

⅝-inch meter	$0.75
¾-inch "	.75
1-inch "	1.50
1½-inch "	2.50
2-inch "	5.00
4-inch "	10.00

Annual Charge for Fire Sprinkler Service Systems

3-inch meter	$50.00
4-inch "	75.00
6-inch "	100.00
8-inch "	140.00

Ripon

Daily Meter Rates

First	500 gals.	25¢ per 1,000 gals.
Next	500 "	20¢ " " "
"	4,000 "	15¢ " " "
"	20,000 "	10¢ " " "
Over	25,000 "	6¢ " " "

~and in resurfacing~

Above—Maple Street, Shenandoah Iowa, resurfaced with Vibrolithic in 1924, is in splendid condition today. Added strength, as well as a smooth non-skid surface, is a quality of Vibrolithic resurface pavement.

Below—Chestnut Street, Virginia, Minnesota, resurfaced with Vibrolithic two years ago. Bonded perfectly to the old base, this shallow resurface slab has gone through two severe winters without evidence of strain.

THE Vibrolithic METHOD

The Vibrolithic Method of constructing concrete pavement presents three great advantages in resurfacing:

1. *Vibration and Pressure drive away the film of air and water which forms between new and old surfaces, making an absolute contact between the old base and resurface slab.*

2. **Vibration and Pressure force the new layer of concrete into the pores of the old surface, forming a perfect bond.**

3. Density of the Vibrolithic resurfacing slab practically eliminates initial shrinkage of the concrete, which prevents separation of the base and new slab frequently caused from internal stresses.

Ask for Booklet A-8.

American Vibrolithic Corporation

INSURANCE EXCHANGE BUILDING DES MOINES, IOWA

SALES OFFICES IN 23 OTHER CITIES

ANNUAL MINIMUM CHARGES

½ or ⅝-inch meter	$7.00
¾-inch "	8.00
1-inch "	9.00
1½-inch "	10.00
2-inch "	12.00
2½-inch "	24.00
3-inch "	36.00
3½-inch "	48.00
4-inch "	60.00

Shawano

QUARTERLY METER RATES

First 3,600 cu. ft.	18¢ per 100 cu. ft.
Next 3,600 " "	16¢ " " " "
" 12,600 " "	13¢ " " " "
Over 19,800 " "	8¢ " " " "

If 15,000 cubic feet are used per month the rate is 6½ cents per 100 cubic feet straight and the bill is rendered monthly.

QUARTERLY MINIMUM CHARGES

⅝ and ¾-inch meter	$2.50
1-inch "	5.00
1½-inch "	7.50
2-inch "	10.00
3-inch "	15.00

Watertown

QUARTERLY METER RATES

First 750 cu. ft.	Minimum Charge
Next 4,250 " "	16¢ per 100 cu. ft.
" 20,000 " "	12¢ " " " "
" 25,000 " "	9¢ " " " "
Over 50,000 " "	4½¢ " " " "

QUARTERLY MINIMUM CHARGES

⅝-inch meter	$1.25
¾-inch "	1.50
1-inch "	2.00
1½-inch "	2.50
2-inch "	4.00
4-inch "	9.00
6-inch "	16.00

Large Cities as a Group Have Lower Infant Mortality Rates Than Small Cities

THAT our larger American cities are, on the average, giving more intelligent attention to problems of infant mortality than the small cities, is indicated by a Statistical Report of Infant Mortality for 1925, covering 697 cities of the United States, made public June 29 by the American Child Health Association and available in pamphlet form. When grouped by size, the cities with populations over 250,000 show the lowest infant death-rate, an average of 71.2 out of every thousand babies born during the year. The cities of 10,000 to 25,000 population have the highest average rate, 76.0 per thousand.

Stonington, Conn., and Winona, Minn., achieved the lowest rates of all cities, the figure being 32. These cities are in the group having populations of 10,000 to 25,000 in 1920.

Of the largest cities, those of 250,000 population or more, Seattle, Wash., was lowest, with a rate of 45. For more than four years Seattle has had the lowest rate among the large cities, In the large population group two other west coast cities were among the lowest three, namely, Portland, Ore., 46, and San Francisco, Calif., 55. The rates for the ten largest cities of the Birth Registration Area were: New York, 64; Cleveland, 66; Los Angeles, 67; Chicago, 75; Philadelphia, 77; Detroit, 77; Baltimore, 82; Pittsburgh, 82; Boston, 85; Buffalo, 86.

Salt Lake City, Utah, was lowest in the population group from 100,000 to 250,000, with a rate of 45.

In the group of cities from 50,000 to 100,000, Union City, N. J., led with a rate of 38. This low rate, it is stated, is due to the absence of hospitals, many baby deaths occurring outside of the city. The corrected rate for Union City furnished by the state was 70. The next lowest city in this population group was Brockton, Mass., whose rate was 39.

Oak Park, Ill., with a rate of 35, was lowest in the group from 25,000 to 50,000.

The rates for the municipalities of over 10,000 population show that the cities of Utah lead, with a composite rate of 47. The cities of Oregon are second, with a rate of 28; the cities of Washington third, with 50; cities of North Dakota and Wyoming fourth, each with rates of 51.

The urban records of 15 states show reductions in infant mortality in 1925, as compared with 1924. A year ago 26 states showed declines in urban mortality over the preceding year.

The statistics issued by the American Child Health Association are based on records of the United States Census Bureau supplemented by preliminary returns from state and local registrars. The report is published annually with the object of interesting the entire country in the reduction of infant mortality and the necessity for complete birth registration. The Association strongly supports the Government's efforts to have the entire country within the Birth Registration Area by 1930, for it feels that a complete record of births and deaths is essential for the carrying out of an effective child health program in every municipality in the country.

Court Decisions Relating to Public Health

TOWN held liable for damages caused by sewage pollution of stream.—(North Carolina Supreme Court; Cook et al. *v.* Town of Mebane, 131 S. E. 407; decided January 27, 1926.) One of the grounds of complaint in this case was that the town of Mebane by the discharge of sewage had polluted the stream which flowed through the land of plaintiffs to the damage of their land and mill site. The jury found for the plaintiffs, and the judgment of the lower court thereon was affirmed by the Supreme Court.

City meat inspection ordinance held valid.—(Maryland Court of Appeals; Mayor and City Council of Baltimore et al. *v.* Bloecher and Schaff (Inc.), et al., 132 A. 160; decided January 14, 1926.) Ordinance No. 431, adopted on June 25, 1925, by the city of Baltimore and regulating the slaughtering, etc., of animals for human food, was attacked on the ground that it infringed constitutional provisions, but the Court held the ordinance to be a valid and constitutional exercise of legislative power by the Mayor and City Council of Baltimore.

—*Public Health Reports for June 4, 1926.*

Two Streets in Burlington, Iowa, resurfaced with Stanolind Paving Asphalt

Good Pavements at Low Cost

Mr. Thomas J. Smith, former Mayor of Burlington, Iowa, is one of the many public men who favor the resurfacing of old streets. Mr. Smith, in a report covering this question, says:

"Each year many thousands of paved streets and highways, after giving long years of service, reach a stage that calls for some kind of improvement. Some of these pavements have considerable merit as foundations and should be utilized as such.

"I have for the past two or three years been collecting data on street and roadway paving. This data has been collected from such cities as Cedar Rapids, Clinton, Davenport, Des Moines and Dubuque. All of these cities have resurfaced their old brick, macadam, concrete, and gravel streets with asphalt, and have found it very satisfactory.

"No other construction material is more suitable than asphalt. In fact, asphalt may well be termed the universal salvaging material. Our own first resurfacing job was laid on brick paving which had been down for a period of twenty to thirty years.

"Asphalt for this improvement was furnished by the Standard Oil Company (Indiana). I have personally investigated this improvement during the last few weeks, and find that the resurfacing has stood up admirably under heavy traffic."

The street to which Mr. Smith refers was resurfaced with

Stanolind Paving Asphalt

Many towns and municipalities throughout the Middle West are constructing excellent pavements and at the same time are saving money by following this policy of salvaging old pavements. The highway engineers of the Standard Oil Company (Indiana) will make a survey for any community which is contemplating street improvement, and will recommend the correct grades of asphalt. No charge is made for this service.

STANDARD OIL COMPANY

(INDIANA)

General Offices: 910 S. Michigan Avenue CHICAGO, ILLINOIS

ILLINOIS	INDIANA	IOWA	MICHIGAN	WISCONSIN	MISSOURI
Chicago	Evansville	Davenport	Detroit	La Crosse	Kansas City
Decatur	Indianapolis	Des Moines	Grand Rapids	Milwaukee	St. Joseph
Joliet	South Bend	Mason City	Saginaw	MINNESOTA	St. Louis
Peoria	KANSAS	Sioux City	N. DAKOTA	Duluth	
Quincy	Wichita	S. DAKOTA	Fargo	Mankato	
		Huron	Minot	Minneapolis	

When writing to Advertisers please mention THE AMERICAN CITY—Thank you.

Municipal Accounting and Finance

Conducted by Francis Oakey, C. P. A.

Member of the Firm of Searle, Oakey & Miller, New York

Functions of the City Comptroller or Auditor

A COMPLETE control over receipts and expenditures is a fundamental requirement in municipal administration. It is essential to the achievement of two of the main purposes of popular government, which are, first, the contribution by each member of the community of his fair share of the necessary expenses of government, and, second, the expenditure of public moneys for the greatest good of the greatest number. This control begins with the acts of the lawmaking body in levying taxes and granting appropriations. It is continued and made operative by the administration in performing the functions of assessment, collection, and expenditure. These functions are distributed among a large number of officials, namely, the Assessors, the Tax Collectors, the Treasurer, and the spending executives, the departmental heads.

This distribution of authority at once makes it difficult to sustain control over receipts and expenditures. In order to overcome this difficulty it is necessary to centralize in one officer of high rank full and independent authority for exercising control. The officer is the Comptroller.

The word "Comptroller" is one of general significance. It is the title of an officer who controls or directs operations relating to finance. It has been used to describe various offices such as Comptroller of the Currency, Comptroller of the Treasury, Comptroller-General, etc. In municipal affairs the duties discharged by the City Comptroller vary considerably. This is due, first, to variations in the interpretations of the laws. These differences in interpretation may be illustrated by the various methods of procedure followed by City Comptrollers in carrying out the duty of auditing claims against the city.

One Comptroller defines the scope and purpose of each act of appropriation and applies his definitions to the claims presented for audit to determine whether they are legally chargeable to the appropriations. Another Comptroller does not assume this responsibility, leaving it entirely to the several departmental executives who originate the expenditures. Another Comptroller considers that the duty of auditing claims against the city relates only to claims payable out of appropriations, and on the basis of this view omits the audits of claims payable out of special or trust funds.

In many cases the law is badly drafted, making it difficult to carry out the interpretation which is required for the effective discharge of the powers and duties which properly belong to the Comptroller. In some cases the law by its language restricts the powers of the Comp-

The Duties of the Officer Who Controls or Directs Operations Relating to Municipal Finance

Generally Called the City Comptroller or City Auditor

are the subject of this article. The title "Comptroller" is used throughout the article, but the functions described apply equally to municipalities where the title of "Auditor" is used. Among the many duties of the office, as prescribed in the charters of certain cities, are:

1. **To audit all claims against the city.**
2. **To prescribe the method of accounting.**
3. **To keep the accounts of appropriations.**
4. **To prepare the budget.**
5. **To procure printing.**
6. **To register contracts.**
7. **To prepare a balance sheet.**
8. **To interpret the appropriation acts.**
9. **To register the city debt.**

In practice the City Comptroller himself interprets the law which defines his duties, with the result that the procedure followed varies according to the incumbent's point of view and the practice established by his predecessors.

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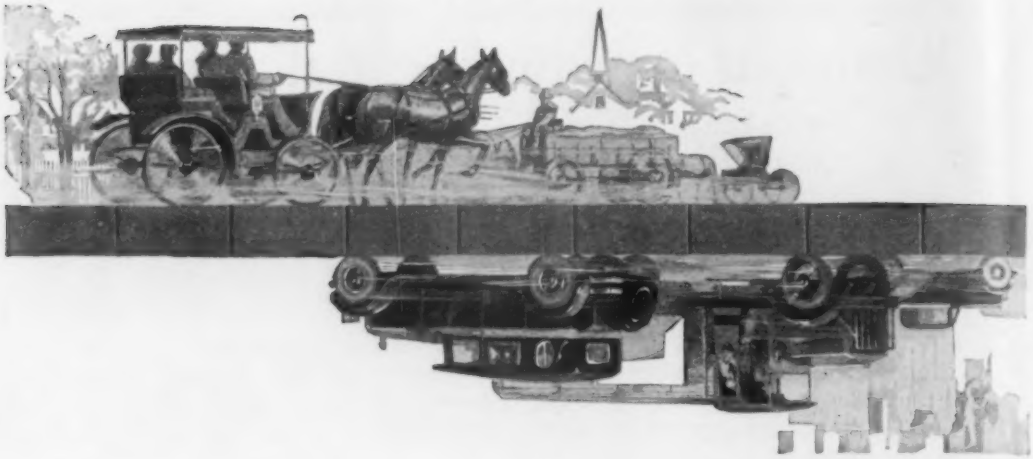

Two-Sided Value

FIRST a generation of trouble-free service from one surface, then lifting and replacing *"bottom-side up"* on a renewed base, and fifteen to twenty-five years more resistance to traffic—*that's* just one of the reasons why vitrified brick, asphalt-filled, makes the most economical pavement a community can select.

For facts and figures taken from official public records proving this remarkable salvage value of the vitrified brick pavement, write for free book *"TWO-SIDED VALUE."* Your copy will be gladly forwarded by return mail.

Pave With VITRIFIED **Brick** PAVEMENTS

OUTLAST THE BONDS

NATIONAL PAVING BRICK MANUFACTURERS ASSOCIATION, ENGINEERS BLDG., CLEVELAND, OHIO

troller; in other cases it is silent in respect to essential powers.

The Powers and Duties Which Properly Belong to the Comptroller

The ultimate purpose of establishing centralized control over receipts and expenditures is to determine that the tax levies and other revenues and receipts are assessed and collected in accordance with law and are fully accounted for and that the expenditures result from just claims and conform to the limitations of the appropriations.

To achieve these purposes, the Comptroller must be clothed with full authority as the chief accounting and auditing officer. He must have the power to prescribe the methods of accounting in all departments and to examine all their books, records, and documents, to inspect or count cash balances, investments, and inventories, and to obtain from officers and employees any information he may require relating to the affairs of the city. Above all, he must be independent of executive authority or influence. Summarized, his duties consist of five main classes:

1. The control of receipts
2. The control of expenditures
3. Prescribing methods of accounting
4. Keeping the general accounts
5. Preparing statements and reports of financial condition and operations

The Control of Receipts

It is the duty of the Comptroller to determine that the revenues and other moneys justly and legally due the city are collected promptly, in the correct amounts, and are properly accounted for. He must ascertain also that there are satisfactory reasons for failure to collect, that is, that in such cases there has been prompt and vigorous official action followed by the application of due process of law.

In carrying out these duties it is necessary to adopt various methods of procedure due to variations in the nature of the revenues and receipts and in the ways they originate and are collected. From the standpoint of control and audit, a city's revenues fall into two classes:

1. Those which accrue prior to collection, such as taxes and rents
2. Those which do not accrue prior to collection

In the case of taxes the process of assessment provides a foundation for establishing a control over collection. This is accomplished by setting up for each year's taxes, when assessed and confirmed, a controlling account for the total amount thus accrued to be accounted for by the collector. For this and other purposes the Comptroller should maintain a general or controlling ledger, in which an account should be opened for each year's taxes, debited with the total amount assessed, and credited with the amounts subsequently collected or abated, showing the balances to be accounted for by the Collector. Periodically the Comptroller should compare the balance with the Tax Collector's records and ascertain that the aggregate of the items on the tax roll shown as uncollected equals the balance of the controlling account. He must then ascertain that the amounts reported to him as collected are the amounts which appear on the records of the collector and have been deposited promptly in the bank to the credit of the city and have been withdrawn only by due authority. All amounts recorded by the Collector as paid over to the Treasurer must be verified by comparison with the Treasurer's books. Thus, it is clear that the processes of audit are essential to effective control and must be performed by the officer responsible for control. The next step is the review of all abatements or adjustments applied to the reduction or cancelation of taxes originally assessed, to determine that each has been granted by duly constituted authority and in accordance with law. The final step is the examination of delinquent taxes to ascertain that the required action has been taken for collection.

Revenues which do not accrue prior to collection include licenses, permits, privileges, fees for registration and searches, etc. In most cases the amounts of these are fixed by law, which permits control by the use of financial stationery. This principle of control consists in charging executives responsible for the issuance of licenses, permits, etc., with the number of each class of license or permit form supplied to them. Under this method the executives must account for the forms by showing the required collections for all forms not on hand. Effective operation of this principle requires that the Comptroller shall procure the forms, have custody of them, deliver them to the departmental executives as required, keep an account thereof with each executive, and periodically examine each office charged with issuance and collection. Thus, again, it is clear that control cannot be effective unless it includes the processes of audit.

Income from investments in bonds is another important item of revenue which requires control and audit. The most effective method is to set up in the Comptroller's ledger the amounts of interest when due as required in

Warrenite-Bitulithic Pavement

"A WARRENted Product"

Deep-rooted Quality—

The satisfaction that comes from using Warren pavements comes from the deep rooted quality which goes through every part of the job---from the choice of materials to the last item of workmanship.

The original Warren idea that real service could come only from quality material and perfect workmanship still guides this organization.

Warren Brothers Company

A national organization to build good roads

EXECUTIVE OFFICES:
Boston, Mass.

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New York, N. Y.	Chicago, Ill.	Toronto, Ont.	Oklahoma City, Okla.
Portland, Ore.	Phoenix, Ariz.	Memphis, Tenn.	Salt Lake City, Utah
St. Louis, Mo.	Washington, D. C.	Los Angeles, Cal.	Melbourne, Australia
Winnipeg, Man.	Utica, N. Y.	New Orleans, La.	Sydney, Australia
Harrisburg, Penn.	Minneapolis, Minn.	Dallas, Texas	Buenos Aires, R. A.
Vancouver, B. C.	Oakland, Cal.	Charlotte, N. C.	Tokyo, Japan
		Birmingham, Ala.	

relation to the investments held. The investment held is therefore the basis, and the reliability of this basis must be established not only by proof of the investment records but also by inspection and count of the securities.

There are other revenues to which the Comptroller must apply the processes of audit. Grants from the state must be confirmed. Rents must be accrued on the basis of leases. Receipts from franchises must be verified in the light of the obligations recited in the indentures.

The Comptroller's responsibility does not end with the control and audit of revenues. It is held that all moneys which come into or should be received by the city treasury should be controlled or reviewed by the Comptroller. There are many receipts which are not revenues. The most important of these is receipts from the sale of city bonds. The Comptroller must ascertain that each bond issue is authorized by law, that the procedure followed in obtaining and opening bids and making awards conforms to the legal requirements. Finally, he must determine that all bond certificates are accounted for and that the correct amounts are received, including accrued interest. He should set up a controlling account for each bond issue showing the total par value received from the engraver, the total par value issued, redeemed and canceled, and exchanged and canceled. Periodically he should inspect the unissued and the canceled certificates in the Treasurer's vault to determine that the par values agree with the requirements of the records. On these occasions the coupons on unissued and canceled bonds must also be inspected.

All other receipts such as trust fund moneys, security deposits, etc., must also be audited by the Comptroller to determine that the obligations assumed by the city in these matters have been properly discharged.

The Control of Expenditures

It is the duty of the Comptroller to determine that all expenditures are based on just claims or obligations and are authorized. The varying nature of expenditures requires various methods of procedure for effective control and audit. From this standpoint the expenditures of a city may be grouped as follows:

Expenditures out of appropriations
Expenditures out of bond funds
Expenditures out of special and trust funds
Purchases of securities for the sinking fund
Refunds of taxes and other receipts

The rule is nearly universal that all expenditures made by a city must be authorized by law. In fact, the provision is commonly found in city charters to the effect that no money may be drawn from the treasury except in consequence of appropriations made by law. This provision applies literally to the general fund, for it is from this that appropriations are made. But, interpreted broadly, this provision applies also to every other fund. Expenditures from the sinking fund for the purchase of investments are authorized by implication in the sinking fund act and also in the appropriation acts by which money is transferred annually to the sinking fund from the general fund. Expenditures from bond funds are authorized in the acts under which the moneys are borrowed. Expenditures from all other funds such as road funds, assessment funds, school funds, library funds, etc., are also governed by laws, which define, at least in general terms, the purposes for which the moneys shall be spent.

To determine whether a claim or obligation should be paid, it is apparent, therefore, that an essential step is to ascertain whether its payment has been authorized by law. Consequently, it is incumbent upon the Comptroller to interpret the scope and purpose of each act of appropriation, each act authorizing the borrowing of money, creating a sinking fund, or establishing a special fund. If he does not do this, the necessary interpretations are left to the spending executive, with the result that there is only a limited central control over expenditures.

The next step is to determine whether the unexpended balance out of which it is proposed to pay a claim is sufficient for the purpose; otherwise, the claim must be disallowed, since the Comptroller is without power to pass a claim unless funds are available for its payment. To discharge this responsibility the Comptroller should set up an account for each appropriation, each bond fund, and each special fund, and these accounts should show at all times the unexpended balances.

A claim may represent an expenditure strictly within the scope and purpose of the appropriation or fund from which it is proposed to pay it, and there may be an unexpended balance sufficient for its payment and still the facts may be such that it should not be paid:

It may have been paid before.
It may not be in accordance with contract, order or specifications.
It may be based on unreasonable prices.
The evidence of delivery of goods or rendition of services satisfactory in quantity

The pleasing light gray color of concrete pavement will dress up your street

Famous Streets in Los Angeles Carry Flood of Traffic

Los Angeles has more concrete streets than any other city in the country—a total of over 220 miles.

All of these streets are carrying a steadily increasing volume of traffic, and are doing so with very little maintenance.

Some of them are famous thoroughfares representing the most advanced type of paving construction.

They include Vine Street, "The Highway of the Movie Stars;" Franklin Avenue, one of Hollywood's fine residential streets; Cahuenga Avenue, the main artery leading into Los Angeles from the San Fernando Valley; and Hill Street from Washington to Santa Barbara Avenue.

Los Angeles is building more concrete streets every year. The latest of these is Pico Boulevard. This, when completed, will be from 34 to 68 feet wide throughout its entire length of seven miles.

It will pay other cities to make a careful study of Los Angeles' advanced practice in permanent street paving.

Property owners and local authorities are invited to write nearest office listed below for the facts. Also ask for your copy of our free booklet on "Concrete Streets."

PORTLAND CEMENT ASSOCIATION

A National Organization to Improve and Extend the Uses of Concrete

Atlanta	Denver	Lincoln, Nebr	Oklahoma City	Salt Lake City
Birmingham	Des Moines	Los Angeles	Parkersburg	San Francisco
Boston	Detroit	Milwaukee	Philadelphia	Seattle
Chicago	Indianapolis	Minneapolis	Pittsburgh	St. Louis
Columbus	Jacksonville	Nashville	Portland, Oreg	Vancouver, B. C.
Dallas	Kansas City	New Orleans	Richmond, Va.	Washington, D. C
		New York		

and quality may be incomplete.

The extensions or footings of the bill may be incorrect.

The required executive approval may be lacking.

If any of these defects exist, it must be detected by the Comptroller and the claim disallowed until corrected or adjusted.

The most effective method for determining whether or not a claim has been paid before, is to maintain a file of open orders and a record of contract payments. For each claim presented for payment there should be an open order, which, when the claim is passed for payment, should be stamped paid and transferred to a paid file of orders. Each claim paid under a contract should be recorded in a record of contract payments, so that when a claim is presented, reference to this record will disclose at once whether it has been previously paid.

A copy of every contract executed should be filed with the Comptroller, and also a copy of every order issued, so that by reference to these files it can be ascertained whether a claim conforms to the agreement between the city and the vendor.

Before a contract or order is filed, the Comptroller should review the prices specified, to determine whether they are reasonable and in accordance with the market. We do not agree with the theory that this responsibility rests solely with the spending executive. If the Comptroller omits such a review and it later develops that exorbitant prices have been paid, it would be reasonable for the public to ask why the Comptroller did not detect such extravagance or irregularity. Moreover, appropriate action taken in respect to disparity in prices paid by departments should have a beneficial effect.

The responsibility for determining that goods have been delivered or services rendered satisfactory in quantity and quality naturally belongs to the spending executive. But the Comptroller should require evidence of the facts in the form of autographed approvals, not only of departmental heads but also of their subordinates who are charged with inspection of deliveries. On payrolls, too, approvals by those directly cognizant of the facts should be obtained. A personnel record is also necessary in order that the Comptroller may have knowledge as to regularity of employment and rates of pay.

The necessity for verifying the clerical accuracy of claims needs no comment.

Prescribing Methods of Accounting

Effective control over receipts and expenditures requires the adoption of standards in methods of accounting and reporting. Claims cannot be properly audited unless they are presented in standard form, clearly expressed, and in sufficient detail to convey all pertinent facts. Accounts kept by departments cannot be reviewed effectively unless they are kept under accounting control, complete in detail, and supported by satisfactory documentary evidence. In addition, a standard classification and terminology of accounts is highly desirable, not only as a means of clear reports but also for the purpose of comparison. It is obvious that such standards cannot exist unless the power to prescribe methods of accounting is vested in some central authority. This authority is the Comptroller.

The exercise of this power also facilitates the keeping of the general accounts and the preparation of statements of financial condition and of operations—important duties of the Comptroller.

Keeping the General Accounts and the Preparation of Financial Statements

Intelligent administration requires that the chief executive be supplied currently with summary reports of financial condition and of operations. The legislative body should also have such reports. At the close of the fiscal year a statement of financial condition and one of receipts and expenditures should be published for the information of the public.

It is clear that the preparation of such reports must be done by a central accounting officer, since it consists in recording and summarizing the transactions of all departments. Obviously, the Comptroller is the officer who should perform this duty. For this purpose he should keep a general ledger containing controlling accounts for assets, liabilities, revenues, expenditures, funds and appropriations. This ledger should be supported by detailed ledgers or records of appropriations and funds, city debt, and classified receipts and expenditures, from which such detailed statements might be prepared as seemed desirable to support the summary statements.

The Need for Clearness in the Laws Which Define the Powers and Duties of Comptroller

In creating an office, the legislative body seeks to define in the law the powers and duties delegated to the incumbent. This is a difficult thing to do; too much definition often restricts, while too little permits sometimes various interpretations. The office of City Comptroller

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CHEVROLET

Another Chevrolet Achievement

New Low Prices

1-Ton Truck reduced to $495

½ Ton Truck reduced to $375

(Chassis only) f.o.b. Flint, Michigan

$55 Reduction on 1-Ton Truck

Engineered to meet the most severe requirements of commercial haulage, Chevrolet trucks have won worldwide acceptance on the basis of low first cost, low operating cost and slow depreciation.

This spectacularly growing popularity has made necessary a greatly increased production — the economies of which are now passed on to buyers in the form of a drastic price reduction.

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN
Division of General Motors Corporation

World's Lowest Priced Gear-shift Trucks

is often governed by a law so indefinite that an interpretation of the powers and duties which properly belong to the office cannot be drawn. This situation is sometimes due to the fact that the provision creating the office is contained in a charter written before the development of the sciences of municipal accounting and auditing and at a time when the financial transactions were small in volume and simple in character in comparison with those of the present day. In many cases the legislative body apparently was not informed as to the powers and duties which properly belong to the office.

The most common defect in laws creating this office is the failure to delegate the power and duty to control and audit receipts; the duty of settling claims against the city is generally stressed. Also, the power to prescribe methods of accounting is often omitted.

In conclusion, it is believed that the following duties and powers should be expressed in the law governing the office of Comptroller:

1. It shall be the duty of the Comptroller to audit the accrual, collection, and deposit of revenues, the collection and deposit of receipts derived from borrowings, from sales of real and personal property, from assessments and reimbursements, from refunds of expenditures, and from any other sources whether applicable to the general or any other fund.

2. It shall be the duty of the Comptroller to audit all expenditures and disbursements made by the city, whether chargeable to appropriations of the general fund or any other special or trust funds held by the city or for which the city is responsible in any capacity or to any degree. All salaries and wages of officers and employees of the city and all claims against the city for services rendered or goods delivered shall be audited by the Comptroller before payment.

3. The Comptroller shall have the power to audit the books and records of any department or other subdivision of the city government to such extent as he may deem necessary and at such times as he may elect.

4. The Comptroller shall prescribe the methods of accounting of the city and of its several departments.

5. The Comptroller shall keep the general or controlling accounts of the city and such detailed accounts of assets, liabilities, expenditures, revenues, receipts, funds, and appropriations as may be required.

Three Examples of Fire Prevention Services Available for Municipalities

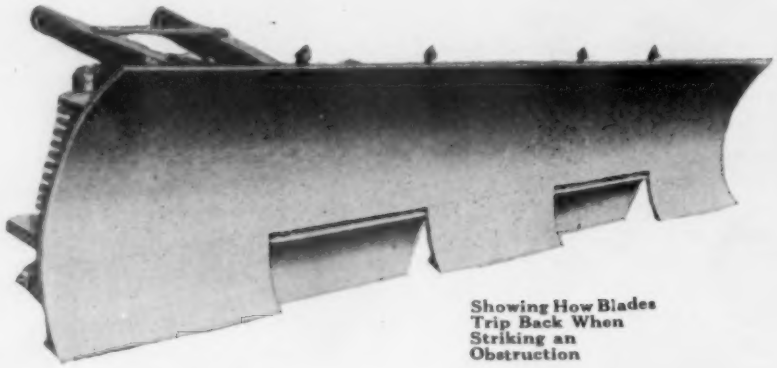
FOR the information of the firemen at the recent annual convention of the National Firemen's Association, an interesting outline of "Underwriters' Laboratories' Service to Municipalities" was given by M. M. Brandon, Service Engineer of the Chicago office of that organization. As many municipalities are not taking full advantage of the aids available from the Underwriters' Laboratories—a service not for profit, maintained by the National Board of Fire Underwriters—the following paragraphs from Mr. Brandon's paper, descriptive of three of these activities, are here published:

Safety Requirements for Gasoline Pumps

A visible-measure gasoline pump makes its appearance for the first time in a city. Someone complains of the fire hazard involved and of the lack of safeguards around this device. The City Council is called on to take some action. Devices of a similar nature have in all probability been submitted to Underwriters' Laboratories, which has conducted exhaustive tests on the device with a view toward determining its relative hazard and of discovering a means of lessening this hazard. These results of the tests, with recommendations as to the necessary safeguards, are probably published and available for the use of the City Council. These results are absolutely unbiased and therefore may be used without fear of partiality being shown. Visible-measure devices labeled to indicate that they have complied with the safety requirements shown to be necessary by Underwriters' Laboratories' tests can in all likelihood be obtained; so the city is relieved of the necessity of specifying construction which will retard business until manufacturing methods are adjusted to meet the specifications.

Underground Storage of Hazardous Liquids

Now suppose some underground storage tanks for hazardous liquids have leaked and the resulting hazardous liquid has collected in a depression in the land and has caused a fire, or suppose several such tanks have been found defective and the likelihood of serious fires is realized by those interested in fire protection in the city. The question will arise as to what is safe. Without Underwriters' Laboratories' service two courses would be likely to be pursued. Either requirements so rigid as to make it impractical for manufacturers to meet them would possibly be passed, or the city would be put to the expense of exhaustive tests provided it was equipped to make them. With Underwriters' Laboratories on the job, the manufacturers could join together, have tests made to ascertain the limitations of the construction in general use and have all available field data on the tanks studied. The result would be the formu-



Showing How Blades Trip Back When Striking an Obstruction

The Plow's the thing!

BAKER SNOW PLOW

Just a cheering thought for these hot days:—

Next winter, when snowstorms block the highways—
When traffic is all but tied up completely—
When deliveries are slow and business is seriously injured—
—the plow's the thing!

These troubles will all disappear "like dew before the sun" if you harness a good plow—the Baker—to your motor truck or tractor. The Baker Auto Truck Snow Plow with **Tripping Blades, which swing back when obstructions are encountered,** has for years proved itself the most practical attachment for motor trucks for quick snow moving.

Another worth-while thought:—

The Baker Auto Truck Snow Plow is an **all-year-'round** machine. **Use it in summer for shaping up your roads.**

Write for caalog of Baker Snow Plows, showing a wide variety with Tripping Blades, Rigid Blades, and "V" Type Plows.

The
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SPRINGFIELD
ILLINOIS

lation of minimum specifications which would insure the proper safeguards in the construction of the tanks and which would enable manufacturers to turn out products embodying these safeguards without undue cost to the ultimate purchasers. These results would be obtained without a penny of cost to the city. As a matter of fact, they have been obtained already, so I am really advising you of work that has been done.

Improperly Constructed Oil Burners

Another source of fire in the city might be improperly constructed oil burners. Council action could conceivably be asked, as it is being asked today in many cities, to take care of this situation. The question will immediately arise, "What is a properly built oil burner and how are we to know such when we see it?" The answer, of course, is obvious. Investigations such as Underwriters' Laboratories makes are about the only reliable means of ascertaining this. Underwriters' Laboratories' tests these burners under conditions such as they will be operated under in service. Their design is studied, their operation observed, and their service record is watched. Our recommendation on them then goes to engineers of cities and insurance interests and they pass on this recommendation in the light of their broad field experience. The result is a burner whose hazards are reasonably well safeguarded so far as its construction is concerned. They, of course, must be properly installed or the beneficial result of proper construction at the factory is lost.

Municipal Electric Plant Shows Profits

THE financial statement of the Light and Power Department, Westmount, Quebec, shows a most satisfactory financial standing since the plant was established. The net profits for the fiscal year ending October 31, 1925, after providing for all operating charges, including depreciation, were $68,588.15, and after deducting interest and sinking fund there was a surplus of $49,897.36. The assets of the combined electric light and destructor plants, which include land, buildings, and equipment, proportional charge for new city hall office, underground conduits and standard lighting, fire-alarm and police call systems, was $1,051,861.83.

In addition to various bond issues amounting to $425,000, a total of $247,684.52 has been appropriated from depreciation reserve for the extension of plant equipment, and under the authority of by-law, bonds of the city amounting to $350,000 have been retained in substitution therefor. The balance of capital necessary for these improvements, a total of $279,177.51, has been taken from surplus profits.

With the increasing revenues of the plant, the demand for power and light has also been steadily increasing, and the steam generating plant that is operated to take care of the peak load and provide against accident, was found last year to be inadequate for economical operation. After due consideration, it was decided that the plant should be enlarged by the installation of 1,000-kw. turbo-generator, boiler switching apparatus, etc., so as to provide for the increased demands that are being made on the plant. At the same time, arrangements were made for a supply of additional hydroelectric power, the combination of which makes it possible to furnish citizens of Westmount with an adequate and uninterrupted service at very low cost. A further reduction in the rate for electric lighting was made from 4 cents per kw. hr. to 3½ cents, making a saving to customers of over $16,000.

The destructor plant which is operated in conjunction with the lighting plant furnished steam from the burning of refuse and has been given a credit of $6,430.70 for the heat value of refuse consumed, and $2,358.52 for interest earned, which reduces the cost of garbage destruction to the city by $8,798.22. Provision is also being made for heating the buildings of the corporation yards by steam from the boilers in the lighting plant, which will give better service and reduce the fire risk.

Cheerfully to Pay Taxes for Playgrounds Is the Obligation of Every Parent and Motorist

STREET playing is always dangerous nowadays. This is especially true because of the fact that play absorbs the mind of the child more than any other activity. . . . A seasoned motor driver coming into a street where there are children and parked cars doubles his caution, assumes there is a child behind each, and goes down that street as though his course were paved with eggs, every sense on the alert, his car in control and his horn going. But even so, a child intent on a ball or on crossing, can run out, head on, into the approaching car and be killed. The development of many playgrounds in good locations, with proper apparatus to interest children, will save many lives.

In every community there ought to be supervision of children's play. Taxes could not be better expended for quick and sure dividends than to supply playgrounds with a supervisor and play organizer. There is traffic safety in it. There is exercise and consequent health and strength. In this century there is danger of everyone's living too fast. The pursuits in which leisure and the play spirit are a factor are reported to be declining. Success in business is the fetish of almost everyone. Certain great educators state that play is needed. Why not begin it everywhere as a municipal endeavor for the welfare of future generations? Why not provide playgrounds, ballfields, gymnastic apparatus in plenty? We are buying parks, woods, and beaches for adults' recreation. Why can't we buy play for the children and keep them off the streets? . . .

The parent must realize his responsibility, and provide his share of care for his offspring, he must help the public official do his duty, he must cheerfully pay taxes for playgrounds and recreation for his children.

—From a bulletin on "Accidents to Children," published June 15, 1926, by Robbins B. Stoeckel, Commissioner of Motor Vehicles of the state of Connecticut.

Florida Road Building
and
International Harvester Trucks

Chatman & Adams, Contractors at *Clearwater, Fla.*, write:

"This makes our eleventh International truck. In our seven years of experience in road building, we have found that Internationals will stand up under hard usage longer than any other of the numerous makes we have used. As for service, it is unequalled."

* * *

At *St. Petersburg* the Smith Service Co. last year hauled 25,000,000 paving bricks to new road-building projects and used a fine fleet of 25 International Harvester Trucks to do it.

* * *

From letter of *De Soto County Board of Commissioners:*

"The Board has recently added two more Internationals to its truck fleet. Our road superintendent says that the Internationals give less trouble, are more economical to operate, lose less time for repairs, and do more work than any of the various trucks that we have."

B. VANCE,
Auditor, De Soto County.

* * *

Charlotte County (at *Punta Gorda*) owns five heavy-duty Internationals. They are working to complete the famous Tamiami Trail through the Everglades, connecting Miami and Tampa.

* * *

The *Tampa* Rock Co. last August wrote us:

"We want you to know that we are enjoying complete satisfaction from our five International trucks. Our rapidly increasing business is due in large part to the unfailing performance of our International fleet. When we buy more trucks, we will buy Internationals."

(*Note: they have since bought five more.*)

RALPH L. NICHOLS,
President, Tampa Rock Co.

G. A. Miller, leading road contractor at *Tampa*, gives this perfect report:

"My nine Internationals are giving me perfect service, performing the hardest duties imposed on them in construction work every day in the year. I am now using them exclusively and expect to add new Internationals to my present fleet as fast as required."

* * *

L. M. Gray, *Jacksonville*, one of the most prominent road contractors in Florida, got that way through several years of work with International trucks. He has built many miles of Dixie Highway with a fleet of 18 International heavy-duty trucks.

* * *

At *Palmetto*, nine Internationals are being used by Elmo Thomas in highway building. Several are "SD's," short-wheelbase 1½-ton trucks, popular for fast, economical dump-and-trailer work.

Another fleet of ten Internationals at Palmetto is building roads under the direction of Beazley Bros.

* * *

At *Pasadena on the Gulf* a fine fleet of sixteen heavy-duty Internationals has done wonderful work for three years, building roads, streets, bridges and golf courses. None but Internationals were used.

* * *

Sarasota County owns a fleet of 2-ton Internationals.

* * *

In *Marion County* McCormick-Deering tractor power crushes the lime rock, and seven International trucks carry the crushed rock to the highways.

ROAD activity in Florida seems to be a story of International Harvester equipment activity. Our trucks range from ¾-ton "Special Delivery" and 1 and 1½-ton Speed Trucks up to 5-ton trucks. Equally popular in all states, in all lines of hauling. We will be glad to furnish you with detailed information on request.

INTERNATIONAL HARVESTER COMPANY
of America
606 S. Michigan Ave. *Incorporated* **Chicago, Ill.**

The City's Legal Rights and Duties

Conducted by A. L. H. Street, Attorney at Law

One Dealing with Municipal Employees and Officials Must Take Notice of Their Limited Authority

Two interesting cases on this subject were lately decided by the Iowa Supreme Court. In one of these cases—S. Goldberg & Company vs. City of Cedar Rapids, 204 Northwestern Reporter, 216—it appeared that the manager of the city waterworks agreed on behalf of the city to sell to plaintiff certain old cast iron pipe. The city was held not bound to perform the contract by delivering the pipe, because its governing authorities had neither authorized nor ratified the contract. The Court said:

"One who attempts to contract with a municipal corporation is bound to take notice of the limitation of the power of the particular officer or agent to make such contract, and one dealing with a municipal corporation under such circumstances deals at his peril. . . . The doctrine of implied agency or ostensible authority applied to private parties or corporations is limited very much, so far as municipal corporations are concerned, for the reason that between private parties or private corporations the extent of authority is known only to the principal and agent, whereas, in municipal corporations, it is a matter of record in the statute or the ordinances and proceedings of the municipal corporation."

In the second case—Connolly vs. City of Des Moines, 204 Northwestern Reporter, 284—it was decided that one claiming overtime compensation under agreement with a city hospital superintendent could not recover without proving legal power in the superintendent to make the contract.

Right to Use Sidewalks for Business Stands Cannot be Acquired by Long-continued Use

In the case of Kendig vs. City of Lancaster, 17 Pennsylvania Municipal Law Reporter, 161, the Court of Common Pleas for Lancaster County, Pa., decided that an ordinance requiring the removal from public sidewalks of stands used for the sale of merchandise was reasonable and valid, even as against one who had so maintained a stand for more than twenty years. The Court said:

"The object of city councils in passing the ordinance was clearly to prevent the sale and displaying for sale on the city sidewalks, and this object should not be defeated because other provisions in it are unreasonable and invalid.

"The fact that the plaintiff has maintained this stand for more than twenty-one years gives him no right by prescription to continue to maintain it. It is too well settled to need the citation of authorities that no such right can be acquired against a municipality by prescription. Nor does the fact, as set forth in plaintiff's bill, but not insisted upon at the argument, that the city of Lancaster permits market stands on certain streets at certain hours under certain regulations, make this ordinance invalid because it does not prohibit such stands as well as the kind that the plaintiff maintains."

Home-Rule Charter May Authorize City to Sell Gasoline

The home-rule charter of Lincoln, Nebr., was so amended as to empower the city council "to engage in the business of selling gasoline and oil to the inhabitants of the city, both at retail and wholesale, and for that purpose shall have power to acquire and own such real and personal property as may be necessary and incident thereto. The city shall not charge for gasoline and oil, sold by it, more than the cost thereof to the city, plus the cost of handling the same, including contingencies."

This provision and an ordinance adopted under it were upheld by the Nebraska Supreme Court in the case of Standard Oil Company vs. City of Lincoln, 207 Northwestern Reporter, 172.

It was held that "a city may enact and put into such charter any provisions for its government that it deems proper, so long as they do not run contrary to the constitution or any general statute." It was further held that municipal sale of gasoline may be upheld, subject to statutory and constitutional limitations, because gasoline has become an indispensable commodity. The opinion concludes:

"Since the power has been delegated to the defendant city . . . to make its own charter, the city may do that which the state may do, or which the state has authorized the city to do, so long as it does not violate the federal or state constitution or the general laws of the state."

Public Service Patron Cannot Be Required to Pay Predecessor's Bills

A city operating a public service utility, such as electric lights, water, etc., must furnish such service or commodity to the public, under reasonable regulations, and it cannot require an applicant for such service to pay an account made by another person or corporation at the place applied for, in the absence of a statute regulating the power of individuals to make contracts in reference thereto. (Mississippi Supreme Court, Carnaggio Brothers vs. City of Greenwood, 108 Southern Reporter, 141.)

Accepting a New Bid Without Re-Advertising for Bids Is Illegal

A decision lately handed down by the Court of Quarter Sessions at Uniontown, Pa., tends to make fairness on the part of municipal authorities in letting contracts for public work compulsory when it is not voluntary.

A borough received proposals for the construction of water-works improvements. The Pittsburgh-Des Moines Steel Company was the lowest bidder on two of three contracts to be awarded.

For Large Jobs —
CONNERY'S Tar and Asphalt Heater Style "B"

This heater, made for large jobs, is used extensively by municipalities, state and county highway departments, and contractors.

Send for Bulletin "B" giving full details of how this heater is constructed.

Or—

Send for our little "BLUE BOOK" illustrating our many specials in Tar and Asphalt Heaters—we build just what you want, for road or general construction.

We manufacture a full line of improved non-leakable welded tar and asphalt heaters, sand and gravel dryers, oil burning heaters, pouring pots, etc.

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4000 N. Second Street
PHILADELPHIA, PA.

One Foye was third bidder on the first contract and did not originally bid on the second contract. An award was made to Foye on his verbal offer to take the two contracts at $500 less than the Steel Company's bids. The validity of the award was challenged in the courts and, as might have been expected in view of what other courts have decided, if not to be expected as a matter of abstract justice, the Court of Quarter Sessions decreed that the award was illegal. In other words, the decision knocks the "pet" out of competitive bidding.

City Cannot Be Compelled to Extend Water-Mains at Unreasonable Cost

The extension of the water system from one part of a city where the water-mains are laid to another part of the municipality which comprises new territory taken into the corporate limits is within the discretion of the municipal authorities, and unless an abuse in the exercise of their judgment in that regard is manifest, their decision of the question is final. A resident of a municipality, living in a remote corner thereof, cannot compel the city authorities to extend its water-mains to his premises regardless of the cost and expense to the city, merely because the citizen resides within the boundaries of the municipality. The right to an extension depends upon the reasonableness of such extension, considering the demand for it, the number of water subscribers, and the revenue to be obtained from furnishing the water. (Mississippi Supreme Court, City of Greenwood vs. Provine, 108 Southern Reporter, 284.)

Liability of City and Building Contractor for Not Maintaining Temporary Sidewalk

In the case of Shafir vs. Carroll, 274 Southwestern Reporter, 755, the Missouri Supreme Court affirmed a judgment in favor of plaintiff for injuries sustained in being struck by an automobile while walking around building material piled in the street by a contractor in erecting a building. Kansas City and the contractor were held jointly liable, because a temporary sidewalk was not maintained as required by a local ordinance. The Court said:

"It was the duty of the city and Carroll [the contractor] to exercise ordinary care to preserve the sidewalk in a reasonably safe condition for travel, and thereby maintain a separation of pedestrians and vehicles, which are more or less dangerous when they mingle with pedestrians. That is the very purpose of constructing sidewalks for pedestrians, and constructing the driveways for the vehicles of all kinds."

The Place for the Billboard

WHAT is the use of spending hundreds of thousands of dollars to create beautiful residence sections, beautiful boulevards, fine public buildings and pieces of statuary, and beautiful parks, if we are to allow one industry, for its own private profit, to give a commercial background to those spots of beauty, a background of billboards? It we would protect the civic beauty we create in our cities, we must find some way to regulate the use of outdoor advertising in our cities. Some cities are doing this by zoning; other cities are attempting to do it by local ordinances; and other cities—probably the majority—have made no attempt whatever as yet.

The ordinance which is used in Glens Falls, a small city in New York State, is a good type of ordinance. In Glens Falls, if a man wishes to erect a billboard over 6 feet high, he must apply to the City Council for a permit; he must show the City Council that two weeks previously he has notified every property owner within 200 feet of that desired location that he is applying for this permit. This gives those property owners the right to come before the Council and express their opinions and their objections, if they have any. Then the Council, with the requests on one side and the objections, if there are any, on the other side, can make the decision. In other words, this ordinance gives the property owner in the immediate community around that chosen location a chance to express his opinion and his rights.

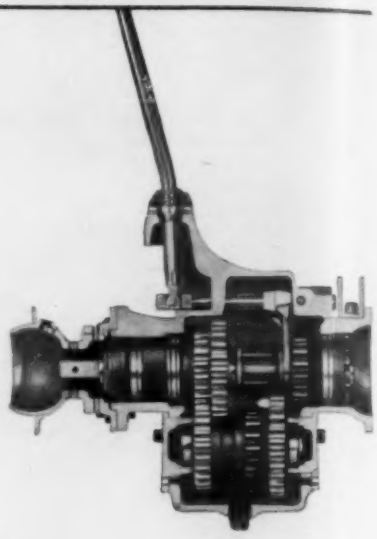
Of course, the great difficulty in regulating this matter in our cities, or anywhere else, is that we are restricting a man's use of his private property, and there is no right in the country that is protected more jealously than the private property right. But we must educate our people and our courts to realize that as our communities grow and become more complicated, a man's right to do as he pleases with his private property must be more and more restricted to protect the rights of the community as a whole. Our courts are recognizing this in their support of the zoning laws; they are recognizing it in supporting ordinances which protect us against unpleasant sounds, an offense to the ear; and ordinances which protect us against unpleasant smells, an offense to the nose; and the time is coming when they will protect us also against unwelcome sights, an offense to the eye. Professor Freund, in his book on "Police Power," has stated that this does not involve a new principle, but will simply be a new application of an old principle.

Massachusetts, instead of waiting for the slow development of the police power along this line, has passed an amendment giving her the right to regulate all advertising which comes within public view. Under that state amendment she has made her state regulations and cities have made their city regulations.

The billboard industry at the present time has challenged the constitutionality of that amendment, and the whole thing is in the courts and will be fought out probably up to the Supreme Court of the United States. That decision will be vital to every state and every community in the Union.

—From an address by Mrs. W. L. Lawton, Chairman, National Committee for Restriction of Outdoor Advertising, before the National Conference on City Planning, at St. Petersburg, Fla.

For Lower Cost Per Ton Mile



There is no longer any considerable area in the United States where the roads are all bad. Nor is there any great space in which the roads are all good.

These are important considerations for the truck buyer. The most economical truck he can buy is the one that gives unfailing performance in the heaviest going, and speed truck pace on the paved highway. It is not enough that the truck shall have one qualification or the other, *it must have both.*

The Ford truck, equipped with the Super-Warford three speed transmission meets these requirements squarely. It provides an *underdrive* which gears down the normal Ford speeds, providing an abundance of power for mud, sand and short steep grades that are so often encountered a mile or two beyond the pavement.

It provides an *overdrive* which gears up the normal Ford speeds, providing high speed on the paved road without increasing engine revolutions.

Warford is particularly adapted to the Ford truck because of its *three point suspension*, the basic principle of Ford design. The transmission is suspended between two universal joints and supported by a sturdy cross member which also reinforces the Ford frame.

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Chicago, Ill.	Sieg-Warford Co.
Columbia, S. C.	Warford-Sales Co. of S. C.
Dallas, Texas	Houdaille-Polk Co.
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Detroit, Mich.	Transmission Sales Co.
Haverhill, Mass.	Massachusetts Warford Co.
Idaho Falls, Idaho	Auto Parts Company
Indianapolis, Ind.,	Kenney Equipment Co.
Kansas City, Mo.	Warford-Western Co.
Lewiston, Me.	Maine-Warford Co.
Los Angeles, Cal	Hammel-Gerke Co.
Mansfield, La.	W. C. Nabors
Memphis, Tenn.	Wayne Spinks Co.
Morrisville, Vt	McMahon Bros.
Philadelphia, Pa.,	Warford-Eastern Co.
Pittsburgh, Pa.,	Warford-Pittsburgh Co.
Portland, Ore.	Woodward Sales Co.
Richmond, Va.,	Baker Equipment Eng. Co
Rockford, Ill.,	Schacht Tuck Co.
San Francisco, Cal.	Warford-Pacific Co.
Seattle, Wash.	Warford-Equipment Co.
Spokane, Wash.	George H. Dietrich Co
St. Paul, Minn.	McGee-White Corp.
Stockbridge, Mich.,	Transmission Sales Co
Tampa, Fla.,	Wholesale Auto Supply House
Washington, D. C.	S. J. Meeks' Son
Witchita, Kan.,	Warford Distributing Co
Windsor Ont. (Home Office)	Warford Corp. of Can. Ltd.
Toronto, Ont.	Warford Corp. of Can. Ltd.
Montreal, Quebec,	A. C. Lewis
Calgary, Alta	Maclim Motors Ltd. / Universal Motor Co. Ltd.
Edmonton, Alta	Dominion Motors Ltd
St. John, N. B.	J. H. Irving
Vancouver, B. C	E. W. Jay
Winnipeg, Man.	Dominion Motors Ltd.
Regina, Sask.	Canadian Motors Ltd.
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Zoning Notes

Prepared by Frank B. Williams
Author of "The Law of City Planning and Zoning"
From data collected by the Zoning Committee of New York (233 Broadway)

Recent Zoning Ordinances

SACRAMENTO, CALIF.—Ordinances, Nos. 288, 289, July 10, 1926

Recent Zoning Decisions

INDIANA.—*Kasper v. Board of Zoning Appeals.*—After denying an application for a variance of the zoning ordinance of the city of Indianapolis on account of hardship, the Board of Appeals subsequently granted it. There had been no change of facts. *Held,* in accord with *People, ex rel.* v. *Leo,* 198 N. Y. Suppl. 395 and *McGarry* v. *Walsh,* 210 N. Y. Suppl. 286 (both reported in previous "Zoning Notes"), that the second action of the Board of Appeals was arbitrary and should be reversed; the Court, in its opinion, saying:

"While I am not quite ready to agree with counsel for plaintiff that the decisions of the Board of Appeals in the Lucas and Crawford petitions . . . forever bar a reopening and a changed view, if the circumstances fairly warrant such reversal, I do feel that the reasoning announced in the New York cases supra, so far as it applied to the unaltered material circumstances of the present situation, is sound and should be adhered to. In other words, the Board of Zoning Appeals should discourage uncertainty in the zoning status of a community, by making final and binding any findings which it may have reached upon a petition for a variance in any locality, where there has been no material and good faith change in the physical conditions.

MASSACHUSETTS.—*Wood v. Building Commissioners of City of Boston, Supreme Court,* May 29, 1926, reported in 152 N. E. 63. The Boston Zoning Act provides that (Sec. 10, last paragraph) "no lot shall be so reduced that the yards, courts or other spaces shall be smaller than prescribed in this act. No yard, court or other open space shall at any time be counted as required open space for more than one building."

A permit for a building was granted making it impossible to allocate to it the open space required by the law without cutting down the required open space in connection with existing buildings. These buildings had been erected before the Zoning Act was passed. *Held,* that the provisions with regard to required open space for existing buildings were valid, and therefore the permit should be revoked.

NEW YORK.—*Actlaw Realty Corporation v. Wilkus, et al., Supreme Court,* reported in *New York Law Journal* for June 17, 1926. The premises in question in New York City were zoned for residence from July 25, 1916, to October 3, 1924. On October 3, 1924, the Board of Estimate adopted a resolution, with an accompanying map, zoning the property for business, but the permissible use of the premises was in no other way changed by the Board. *Held,* that the resolution as passed, and the map as drawn, constituted a change of the district from residence to business; and a permit under which the building had been begun, could not be revoked.

NEW YORK.—*Matter of Fordham Manor Reformed Church v. Walsh, Supreme Court, Appellate Division,* reported in *New York Law Journal* for June 5, 1926. The decision in this case in the Supreme Court was reported in these "Zoning Notes" for March, 1926. This decision has been reversed by the Appellate Division.

NEW YORK.—*Matter of Burden v. Wulfsohn.* In our "Zoning Notes" for July, 1926, we reported an application for mandamus to compel the city to issue a permit for the apartment house, with the large appurtenant open spaces which the ordinance requires in the zone in question; which was denied on the ground that the applicant had not first applied for relief to the Board of Appeals. The Mount Vernon *Daily Argus* for Wednesday, June 9, 1926, reports that instead of going to the Board with these plans, the applicant has submitted new plans to the building inspector, upon which a permit has been issued, and construction of the building energetically begun. While many of the people living in the district regret the fact that an apartment will be built in it, the outcome is an entire vindication of the law of the state and the ordinances of the city.

NEW YORK.—*People ex rel. Lovett v. Walsh, Supreme Court,* reported in *New York Law Journal,* July 2, 1926. The Board of Standards and Appeals granted a temporary permit for the use of a residence in a residential district for an undertaking business. The building was but one house removed from a business district. The condition was imposed that no sign other than a small glass sign on the inside of the ground floor window should be displayed; that no structural alteration or change should be made; that the use should be limited to two years; and that it should be confined to the front room on the first floor for a licensed embalmer's office and mortuary chapel, the remainder of the building being restricted to residential or dwelling use. *Held,* that the variance was an abuse of discretion in that there was no practical difficulty or unnecessary hardship. The facts of the case are reviewed to show that this is true. The fact that the premises were only one removed from premises in business use is not of sufficient weight to warrant an exception, regardless of the fact that the business use of the premises is not conspicuous.

NEW YORK.—*Thrall v. Walsh, Supreme Court,* reported in *New York Law Journal,* June 30, 1926. The owner of a lot in a residential district applied to the Board of Appeals for permission to erect a five-story elevator apartment of attractive design with stores on the ground floor. The premises are next to premises in business use.

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The Board gave the permission only in so far as it affects the first story "for a depth of 53 feet, on condition that the remainder of these premises shall be restricted and maintained for conforming residential uses; that the front elevations on the Eighty-fifth Street front and Twenty-second Avenue other than store show windows shall be finished with face brick and architectural terra cotta or stone trimmings; that it shall be of attractive architectural design; that there shall be no openings of any nature or description from the store area to the Eighty-fifth Street side; that the street wall of the Eighty-fifth Street frontage shall be returned on the Twenty-second Avenue front for a distance of not less than 16 inches; that the business use on the first story shall be restricted to retail mercantile store use and occupancy, no part of store used to be occupied for meat market, fish store, or delicatessen; that there shall be no advertising signs or display erected or maintained of any nature or description on any portion of the building on the Eighty-fifth Street front, nor on the Twenty-second Avenue frontage other than lettering on the plate-glass show windows of the stores; that the store use shall be separated from the apartment use at the rear by unpierced walls of approved masonry; that return drawings shall be submitted to this Board showing the layout of the store floor and façades before submitting same to the superintendent of buildings for consideration; that all permits necessary for the prosecution of the work shall be obtained within nine months and the building completed within eighteen months from the date of this action.'

"By certiorari to review the action of the Board the matter comes before the Court. It is apparent that the determination of the Board was induced largely by the existing and rather unusual physical conditions. The property involved was contiguous to the dividing line between a residential and a business zone. The one half of the block fronting on Bay Parkway adjoining the other half owned by the respondent already was devoted to business purposes. It cannot be said that there was no basis for a finding that such use for general business purposes of one-half the frontage on Bay Parkway did not impair or wholly destroy the availability of the other half for utilization for residential purposes in view of the character of tenants usually attracted to expensive elevator apartments. It cannot be said as a matter of law that the utilization of one half of this block for business purposes did not present a 'practical' difficulty in the strict enforcement of the zoning resolution against the other half situated in a residential district. The resolution adopted by the Board in granting respondent's application contains explicit and detailed provision both as to the character of the proposed structure and as to the character of that portion thereof to be devoted to business purposes. The conditions and restrictions embodied in the resolution of the Board negative any intent to effect a radical departure from the general scheme and intent of the zoning resolution. On the contrary, it evidences a purpose to preserve that resolution unimpaired in its general scope, except to the extent that a variation was necessary in order to do 'substantial justice' in this 'specific case.'" The Court therefore decides that it "cannot hold that the action of the Board evidences an unwise, abusive or arbitrary discretion, and, therefore," holds that it "should not interfere with the action of the Board."

The Municipal Bond Market

By Sanders Shanks, Jr.

Editor, *The Bond Buyer*

THE month of July witnessed a marked decline in the number of new municipal bond issues placed on the market. The final total for the month will be less than $85,000,000. The June total was $136,430,509.

Although offerings of the month were light, particularly those in the highest-grade class, there was no advance in prices. This is due to the fact that there was a large supply of bonds in the hands of the dealers. Many large issues were taken by dealers during May and June, all of which have not been placed with permanent investors as yet.

The largest issue sold during the early part of the month was a $3,000,000 Philadelphia issue. The city's Sinking Fund was the successful bidder. The largest offering of the month was a block of $8,776,000 Pittsburgh's. The offering is scheduled for a date later than the time of this writing. The state of New Jersey sale of $7,000,000 4¼'s, referred to in these columns last month, was made to local banks at an average yield of 3.97 per cent.

The present outlook for the month of August is that offerings will continue in small volume.

The following list of important July offerings is presented as a guide to the trend of prices:

Amount	Issue	Maturity	Rate %	Yield %
$ 335,000	Braintree, Mass.	1927-41	4	3.91
3,000,000	Philadelphia, Pa.	1941, 76/46 & 1976/56	4	3.96
500,000	Delaware	1966/27	4	4.03
500,000	York, Co., Pa.	1931-56	4¼	4.07
500,000	Somerset Co., Pa.	1936-56	4¼	4.08
450,000	Susquehanna Co., Pa.	1931-56	4¼	4.09
350,000	Washington Co., Pa.	1940-56	4½	4.12
250,000	Baltimore Co., Md.	1954-56	4½	4.13
585,000	Waterbury, Conn.	1927-64	4¼	4.18
820,000	Hempstead, N. Y., U. Free S. D. No. 15	1928-56	4½	4.23
380,000	Wyandotte, Mich.	1927-56	4½	4.25
500,000	Dayton, Ohio	1927-51	4½	4.27
300,000	Cheektowaga, N. Y., U. Free S. D. No. 7	1927-56	5	4.33
500,000	Alameda Co., Calif.	1931-34	5	4.36
400,000	Woonsocket, R. I.	1927-66	4¼	4.33
350,000	Clackamas Co., Ore.	1938-46	4½	4.48
335,000	Phoenix, Ariz.	1927-51	4¼	4.49
401,000	Belmar, N. J.	1928-63	5	4.75
500,000	San Jose, Calif.	1951	5	4.81
1,540,000	West Palm Beach, Fla.	1928-36	5	5.89
1,000,000	Fort Lauderdale, Fla.	1946	6	6.05
830,000	Clearwater, Fla.	1956	6	6.12

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Municipal and Civic Publications

Prices do not include postage unless so stated

The City Traffic Problem.—Addresses and discussion at the Fourteenth Annual Meeting of the Chamber of Commerce of the United States, by A. L. Humphrey, Elliot H. Goodwin, Frank A. Coates, Capt. E. V. Rickenbacker, R. H. Aishton, W. R. Dawes, and Richard B. Watrous. 40 pp. The topics presented are: What Commercial Organizations Can Contribute to the Solution of the Traffic Problem; Coordination of Transportation as an Aid in the Solution of the Traffic Problem; The Role of the Automobile Industry and the Automotive Trade in Connection with the Traffic Problem; and The Relation of the Railroads to the City Traffic Problem. (Apply to the Chamber of Commerce of the United States, Washington, D. C.)

The Extraterritorial Powers of Cities.—By William Anderson, Professor of Political Science, University of Minnesota. Reprinted from 10 *Minnesota Law Review*, Minneapolis, Minn. 43 pp.

The actual citation of cases shows that municipal areas are the centers rather than the limits of municipal activity, and that cities are doing a large number and a great variety of things outside their limits. It is maintained that no serious wrong can result from a liberal court interpretation of the rights of municipal corporations to acquire property and carry on business almost anywhere in the state, as do private corporations. We are reminded that the municipal corporation exercises governmental powers only as the agent of the state, and on its behalf, and that while specific and substantial constitutional guarantees must be enforced, where there are no such guarantees, the legislature and its local agencies, the municipalities, can well take care of local matters such as municipal powers and boundaries.

Transport Aviation.—By Archibald Black, Consulting Air Transport Engineer. Simmons-Boardman Publishing Company, New York. VI + 245 pp. Illustrated. $3.00.

In his purpose to cover every angle of the field of air transportation, the author has collected the various papers on the subject which he has presented before engineering societies or published in technical and business journals, and has revised and rewritten the material and incorporated additions and more recent information. The significance of this means of communication between distant points is made plain, and the development of such service in foreign countries and in the United States is described. The principles of such development are studied, including its commercial applications, which involves a careful study of design, operation, maintenance, routes, and landing fields. Important tables are given, covering various phases of operation and costs.

Proposed Uniform Traffic Ordinance for Southern California Cities.—Submitted by the Automobile Club of Southern California, Figueroa Street at Adams, Los Angeles, Calif. January 2, 1926. 21 pp. The Club acknowledges the material aid given in the preparation of this ordinance by Dr. Miller McClintock, Director of the Albert Russel Erskine Bureau for Street Traffic Research in the Southern Branch of the University of California. The provisions of the ordinance are supplemental to, and not in conflict with, the California Vehicle Act. (Apply to the Club.)

Uniform Traffic Ordinance for Colorado Cities.—Report of the Legislative Committee of the Colorado Municipal League to the Fourth Annual Convention of the League, at Fort Collins, May 20, 1926. 4 pp. in *Colorado Municipalities* for June, 1926. (Apply to the Bureau of Business and Government Research, University of Colorado, Boulder, Colo.)

Recent New York Legislation for the Planning of Unbuilt Areas.—By Edward M. Bassett. Comprising the text of the new city and village planning laws of the state of New York, a description of their origin and purposes, and suggestions as to how they should be administered. 1926. These laws make possible the sort of action which must be taken by each local community for itself. It is considered desirable that the leaders in the different communities of the Region should realize the power which the new laws place within their reach and should consider taking early advantage of them. 15 cents. (Apply to the Regional Plan of New York and Its Environs, 130 East 22nd St., New York.)

Hydraulics.—By Joseph N. LeConte, Professor of Engineering Mechanics, University of California. First edition. McGraw-Hill Book Company, New York. 1926. XVI + 348 pp. Diagrams and tables. $3.00.

A new volume presenting the theoretical principles of hyraulics, so prepared that most problems can be solved by first principles rather than by the use of empirical rules, tables or diagrams, which, however, may be employed to reduce and simplify computation in most cases. An excellent book for the elementary student in hydraulics who is familar with differential and integral calculus and analytic mechanics.

Forestry Almanac.—Compiled and edited by The American Tree Association, Washington, D. C. 1926. Semicentennial edition. XIII + 348 pp. $1.00.

This volume outlines the far-reaching work of the United States Forest Service and also the work of the state organizations working to further forestry. It brings state and national legislation up to the time of going to press. The information is specific and authoritative and supplies the means of making personal contacts with those who are active in this most important public service.

The American Municipal Association—Proceedings of the First and Second Conferences; also The Municipal League Compendium.—By John G. Stutz, Executive Secretary, The American Municipal Association. Published by the Association, Lawrence, Kans. 1926. 160 pp. $10 postpaid.

Full information is given regarding the organization, officials, and purpose of the Association, which is made up of state leagues of municipalities and was formed in 1924. The Compendium gives valuable details on the history, purpose, membership, and services of American and Canadian state and provincial leagues of municipalities. This is an important reference book.

The Riddle of Society.—By Charles Platt, Ph.D., M.D. E. P. Dutton & Company, New York. 1926. IX + 306 pp. $2.00.

"A contribution to the understanding of those who do wrong." This sympathetic analysis stirs the heart and quickens the mind to interpret honestly the symptoms and conditions which the author places squarely before us. Here we are made to acknowledge things of which we have been actually but not openly aware in our own natures and experiences. Here we are made to recognize justice, to desire it, and to see ways in which it can be attained. Many a keen shaft, winged with humor, pierces our dullness and selfishness. This book is fundamentally courageous, and is based upon depth and breadth of experience in understanding individuals and their group conditions. It teaches us that a new kind of reform has come, for which the most privileged members of the group must be responsible.

Clean Up Your City and then Keep it Clean.—Prepared by the Civic Development Department, Chamber of Commerce of the United States, Washington, D. C., as a result of the many requests received for suggestions on clean-up campaigns. June, 1925. 18 pp. An interesting comment is given on enlisting the public schools as one of the groups through which this clean-up work may be carried on: "But a word of caution here! The purpose of the schools is to educate. Only when the clean-up activities are so correlated with the educational purpose that the emphasis is on educating the children to their civic responsibilities rather than on cleaning up a community's trash, is enlisting the schools in such a campaign justifiable." (Apply to the Department.)

The Free Public Library.—Its Possibilities as a Public Service Agency. By Dr. George F. Bowerman, Librarian, The Public Library, Washington, D. C. An 8-page reprint from the May, 1926, issue of the *American Federationist*. "The modern public library is a dynamic, aggressive institution which seeks to draw the entire community within the range of its influence." (Apply to the author.)

National Conference on Outdoor Recreation.—Proceedings of the Second National Conference on Outdoor Recreation, held in Washington, D. C., January 20-21, 1926. 175 pp. (Apply to Government Printing Office, Washington, D. C.)

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Special Assessments in New Jersey Municipalities.—Mimeographed report—No. 178—of the Bureau of Municipal Information, New Jersey State League of Municipalities, 34 West State St., Trenton, N. J. 7 pp. This study is made in the hope that the knowledge of what is being done in other places in the state will promote economy and justice in every New Jersey municipality. An outline is given of the conclusions presented in a report on special assessments made by the National Municipal League in 1922 and revised not later than the following year. The New Jersey data are presented in tabular form. (Apply to Sedley H. Phinney, Executive Secretary of the Bureau.)

Junior Chambers of Commerce.—Statement on Purposes, Organization and Activities, 12 pp.; also an 8-page mimeographed report of the activities of specific junior chambers during 1924 and 1925. Published by the Civic Development Department, Chamber of Commerce of the United States, Washington, D. C. "Through their organization the younger men are learning how to run an organization, through their projects or activities they are learning how to utilize their resources most effectively. And at the same time they are learning the life of their community by participating in the most constructive phases of that life." (Apply to the Department.)

The Junior Safety Council.—A handbook for the schools, prepared by the Education Division of the National Safety Council. 103 pp. Illustrated. This is a guide, not a hard and fast program, of organization and activities in the junior safety council movement, which is a movement not *for* but *with* children. A constitution is given, and the duties of officers, executive committee and class representatives are explained, also of special committees and school patrols. The conduct of regular meetings is outlined, and the procedure of a Safety Court. There is a chapter on special projects. Fifty pages of valuable material are given on "What a Junior Safety Council Member Should Know." 50 cents. (Apply to the National Safety Council, 108 East Ohio Street, Chicago, Ill., or to the Education Division of the Council, 120 West 42nd Street, New York.)

National Association of Comptrollers and Accounting Officers.—Official *Journal* of the Association. Vol. I, No. 1. July, 1926. 32 pp. Among the articles in this first issue relative to special problems of municipal finance are: Federal Aid System of Taxation and Disbursement of Public Funds, by Vincent B. Murphy, State Comptroller of New York; Milwaukee's Municipal Savings Account, by Louis M. Kotecki, City Comptroller; A Problem in Bond Selling, by C. C. Pashby, City Clerk, Memphis, Tenn.; and Detroit's Land Value Maps, by C. E. Rightor, Chief Accountant, Detroit Bureau of Municipal Research. (Apply to the business office of the Association, 6801 South Broadway, St. Louis, Mo.)

A Preliminary Experiment on the Supporting Strength of Culvert Pipes in an Actual Embankment.—By M. G. Spangler, Assistant Engineer. Bulletin 76 of the Iowa Engineering Experiment Station, Iowa State College. March 17, 1926. 31 pp. Illustrated. A report of a highway research investigation conducted at Ames, Iowa, by the Iowa Engineering Experiment Station in cooperation with the United States Bureau of Public Roads. (Apply to Iowa State College, Ames, Iowa.)

Winning War Against Mosquitoes Requires Perseverance.—By Anselmo F. Dappert, Assistant Sanitary Engineer, Harry F. Ferguson, Chief Sanitary Engineer, and Isaac D. Rawlings, Director, Illinois Department of Public Health, Springfield, Ill. 5 quarto pp., illustrated, in the June, 1926, issue of *The Nation's Health*, published by The Modern Hospital Publishing Co., Inc., 22 East Ontario Street, Chicago, Ill. Giving concrete instances of prolonged work for malaria eradication in Illinois. (Apply to the publishers.)

Management and Control of Tourist Camps in Minnesota.—Publication No. 10 of the League of Minnesota Municipalities, Minneapolis. June 15, 1926. Prepared from returns from 175 municipalities. 17 mimeographed pp. Tables, with a digest of other information received. The state law and regulations regarding tourist camps are given, also a suggested ordinance creating a tourist camp and providing for its regulation. (Apply to the League.)

County Health Department Is Economical Unit.—By Ralph G. Beachley, M. D., Secretary-Treasurer of the South Carolina Public Health Association, Spartanburg, S. C. 3 quarto pp. in the June, 1926, issue of *The Nation's Health*, published by The Modern Hospital Publishing Co., Inc., 22 East Ontario Street, Chicago, Ill. Illustrated. Showing how such a unit should be organized and conducted. (Apply to the publishers.)

Stream Pollution.—I, A Review of the Work of the United States Public Health Service in Investigations of Stream Pollution, by W. H. Frost, Surgeon; II, The Rate of Deoxygenation of Polluted Waters, by Emery J. Theriault, Associate Chemist; III, The Rate of Atmospheric Reaeration of Sewage-polluted Streams, by H. W. Streeter, Sanitary Engineer; and, IV, Quantitative Studies of Bacterial Pollution and Natural Purification in the Ohio and the Illinois Rivers, by J. K. Hoskins, Sanitary Engineer; all of the United States Public Health Service. Reprint from the *Public Health Reports* of January 15 and February 5, 12, and 19, 1926. 10 cents. (Apply to Government Printing Office, Washington, D. C.)

Highway Research Board.—Proceedings of the Fifth Annual Meeting, held at Washington, D. C., December 3-4, 1925. Edited by Charles M. Upham, Director, and S. S. Steinberg, Assistant Director, Highway Research Board. Part I, containing the reports of Research Committees and report of the special investigations on Urban Highway Finance, on Development of Earth Roads, and on Culvert Structures. 300 pp. Illustrated. Published by the Division of Engineering and Industrial Research, National Reserach Council, Washington, D. C. (Apply to the publishers.)

Service of State Leagues of Municipalities and Their Future.—By John G. Stutz, Executive Secretary of the American Municipal Association and of the League of Kansas Municipalities. An address before the Annual Convention of the League of Texas Municipalities, at Corpus Christi, Texas, May 25-26, 1926. 9 pp. in the June, 1926, issue of *Texas Municipalities*. Some of the services outlined are: special services to city officials involving the securing and distribution of information; the fostering of state laws for proper city administration; a general advisory and rating service for cities; the making of contacts among cities. (Apply to the League, Houston, Texas.)

The Menace of the Wooden Shingle.—Published by the National Fire Protection Association, 40 Central Street, Boston, Mass. Designed particularly for use in promoting legislation requiring the use of fire-safe roof covering. 20 pp. Illustrated. Sherwood Brockwell of the State Fire Marshal's office in Raleigh, N. C., is quoted as saying: "There is no room in modern fire protection for a chief who will not push for anti-combustible roof ordinances." 10 cents per copy; discount for quantities. (Apply to the Association.)

The Blue Book of Non-Theatrical Films.—"1,000 and One." Fourth edition. Published by The Educational Screen, Inc., 5 South Wabash Avenue, Chicago, Ill. Handy size. 128 pp. Among the subjects in the classified subject index of films of especial interest to readers of The American City are the following: Art, Music and Architecture; Civics and Patriotism; Educational Activities; Health and Hygiene; Travel and Transportation; with their various subdivisions. (Apply to the publishers.)

A Model Municipal Appropriation Ordinance.—By Lloyd Morey, C. P. A. (Illinois), Statistician, Illinois Municipal League. 8 pp. in the May-June, 1926, issue of the *Illinois Municipal Review*. This ordinance has been worked out by the city of Springfield, Ill., and is considered by Mr. Morey as a model in almost every respect. (Apply to the Illinois Municipal League, Urbana, Ill.)

American Arbitration Association.—Information Bulletin No. 4. June, 1926. Giving much information as to the value, extent, and available facilities of arbitration in American business; emphasizing the work of the Association, which is a consolidation of the Arbitration Foundation, Inc., the Arbitration Society of America, Inc., and the Arbitration Conference. (Apply to the Association, 342 Madison Avenue, New York.)

Auditing Counties in Texas.—By George Armistead. 18 pp. in the July, 1926, issue of *The Journal of Accountancy*. Part of an address delivered at the annual meeting of the Texas Society of Certified Public Accountants, at Dallas, Texas. A detailed study of the duties of an auditor who is employed to examine and report upon the finances and financial transactions of a Texas county or city or school district. (Apply to *The Journal of Accountancy*, 135 Cedar Street, New York.)

A Milk Ordinance for Minnesota Cities and Villages.—Prepared by representatives of the Division of Dairy Husbandry of the University of Minnesota, State Department of Health, State Live Stock Sanitary Board, State Dairy and Food Department, and the League of Minnesota Municipalities. Publication No. 9 of the League of Minnesota Municipalities, Minneapolis. May 1, 1926. 8 pp. 10 cents; price for larger quantities on application. (Apply to the League.)

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City Accounting Forms.—Approved by the League of Kansas Municipalities and adopted by 50 Kansas cities the first year. Including the following: city clerks' accounting forms, records, receipts, and blanks; city treasurers' accounting forms and receipts; police court records and blanks; water plant accounting forms. electric light plant accounting forms; cemetery accounting and record forms; city planning commission records; and city administrative forms. Most of the forms are applicable to incorporated cities of less than 25,000. A set of samples of all forms (64) is furnished for $5.00. The League can also furnish loose-leaf accounting binders in both large and small sizes. (Apply to John G. Stutz, Executive Secretary, League of Kansas Municipalities, Lawrence, Kans.)

City Plan, Columbus, Ga.—Report of a study of the existing conditions and future requirements of Columbus, made during two years by every municipal agency, under the guidance of John Nolen and his associates, Hale J. Walker and Justin R. Hartzog, for the Planning Board of Columbus. 36 pp. Views, folding maps. This is an interesting presentation of the way in which a city which was well located and well laid out in 1827 to become an agricultural and industrial center may now be guided to meet the new problems created by expansion and greater use of power facilities—providing needed space for recreation, designating major traffic routes, and developing land for its most appropriate use. (Apply to the Planning Board, Columbus, Ga.)

Health Books.—A bibliography on public health and allied topics compiled by the American Public Health Association. Fourth edition. May, 1926. Handy size. 16 pp. The books are listed under the following heads: Preventive Medicine and Public Hygiene; Administration and Socio-Health Problems; Laboratory; Food, Nutrition and Drugs; Vital Statistics; Public Health Engineering; Mental Hygiene; Industrial Hygiene; Social Hygiene and Eugenics; Tuberculosis. Personal Hygiene; Child, Maternity and School Hygiene; Health Education; Nursing; Miscellaneous; also publications of the Association. (Apply to the Association, 370 Seventh Avenue, New York.)

Prevention of Rickets.—A Public Health Problem.—By Julius Levy, M.D., Pediatrician, Newark Beth Israel Hospital. and Consultant, Bureau of Child Hygiene, New Jersey State Department of Health. Reprint from the *Journal* of the Medical Society of New Jersey. 3 quarto pp. Rickets is easily prevented, and is easily cured by feeding the child with cod liver oil and exposing parts of the body to the direct rays of the sun. This becomes a matter for clinics and Baby Keep-Well stations. (Apply to the author, 66 Baldwin Avenue, Newark, N. J.)

General Industrial Survey of Harrisburg, Va.—Issued by the Chamber of Commerce. An economic and social appraisal of Harrisonburg, which is located on one of the main arteries into the South—the Lee Highway—and is surrounded by a county having more than 800 miles of hard-surfaced roads. This 23-page pamphlet is a presentation of facts covering the conditions, facilities and advantages which are of interest to those who are seeking a location for an industrial undertaking or for a home. The information is given clearly, definitely, and briefly, so as to be of the most direct service. The publication is an example of what can be accomplished in the way of worth-while community publicity by an energetic chamber of commerce. (Apply to Reuben L. Humbert, Secretary, Harrisonburg Chamber of Commerce.)

Home Ownership Promoted by the Land Bank of the State of New York.—Compiled by Chas. O'Connor Hennessy, Chairman of the Executive Committee of the Board of Directors of the Land Bank. June, 1926. 11 pp. This pamphlet explains why the Land Bank was formed; why it is rightly called a semi-public institution; the legal restrictions governing the issue of Land Bank bonds and the security behind them; and how the Bank operates. The membership of the Bank is given, this being limited to savings and loan associations. The ultimate beneficiary is, of course, the home-owner. (Apply to the Land Bank of the State of New York, 220 Broadway, New York.)

State Parks and Recreational Uses of State Forests in the United States.—By Raymond H. Torrey, Field Secretary, National Conference on State Parks. Published by the National Conference on State Parks, Washington, D. C. 1926. Report of a survey made by the National Conference on State Parks at the request of the National Conference on Outdoor Recreation, and made possible through a grant by the Laura Spelman Rockefeller Memorial, for the purpose of determining the extent and character of existing facilities for outdoor recreation provided by state agencies and the need and prospect of extending them. 259 pp. Illustrated. (Apply to the publishers.)

Financial Statistics of States, 1924.—Annual Report of the U. S. Bureau of the Census, showing the financial transactions of the 48 states, the assessed valuation of taxable property in those states and the taxes levied thereon during that year, and their indebtedness and specified assets at the close of that year. The financial transactions have been analyzed and are so presented as to show, both for the whole state and for its important departments, the revenue collected, the cost of conducting state business, and the indebtedness incurred for meeting this cost. 140 pp. Tables. 20 cents. (Apply to Government Printing Office, Washington, D. C.)

School Bonded Indebtedness in Nineteen Wisconsin Cities.—By Frank O. Holt, Superintendent of Schools, Janesville, Wis., and John Guy Fowlkes, Associate Professor of Education, University of Wisconsin. Bulletin No. 5 of the Bureau of Educational Research of the University of Wisconsin. January, 1925. 60 pp. Charts. An interesting study for the purpose of determining ability and performance in matters of education. 25 cents. (Apply to the University, Madison, Wis.)

Facts Regarding the Commercial and Industrial Advantages of Binghamton, N. Y.—Compiled by the Binghamton Chamber of Commerce. 47 pp. Many illustrations. This pamphlet gives an interesting cross-section of the city, and shows its advantageous situation relative to raw and manufactured materials and to the great markets of the country. The information is arranged in concise and readable form, and the whole makes a highly creditable handbook of an enterprising and progressive city. (Apply to J. B. Wiles, Manager of the Chamber.)

Possibilities and Advantages of State Forests.—By E. A. Sherman, Associate Forester, U. S. Forest Service, Washington, D. C. Circular No. 14 of the Division of Forestry, State Department of Conservation and Development, Raleigh, N. C. May, 1926. 8 pp. Portions of an address delivered before the annual meeting of the North Carolina Pine Association, at Suffolk, Va., March 18, 1926. The material given refers directly to conditions in Virginia, North Carolina, and South Carolina, yet applies in general principles equally well to every other state having large forest areas. (Apply to the Division of Forestry.)

Should Shack-Towns Be Encouraged?—By A. G. Dalsell, consulting engineer, Toronto, Ont. 6 quarto pp. in the May, 1926, issue of *Social Welfare*, published by The Social Service Council of Canada, 44 Victoria Street, Toronto, Ont. A consideration of some of the problems of urban development in Canada, including housing conditions in the West and the over-development of western cities, showing the evil results of haphazard development of urban lands and that the improvement of shack-town areas is costly. The article is a reply to a paper by W. A. McLean, consulting engineer, of Toronto, on "The Influence of the Modern Highway," in which he is quoted as saying that the building of "shack-towns is a form of modern pioneering which is deserving of all encouragement. Workingmen who take their families into the suburbs of a city under such conditions are not devoid of ambition, nor are they willing to live permanently in a shack. Rather they are men of courage who are willing to accept the inconvenience of a pioneer shack for a time, in order that they may ultimately own a good home." (Apply to the publishers.)

Principles and Practices of Cooperative Marketing.—By Eliot Grinnell Mears, M.B.A., F.E.S., Professor in the Graduate School of Business, and Lecturer in Cooperative Marketing, Leland Stanford, Jr., University, and Mathew O. Tobriner, M. A. Ginn and Company, Boston. 1926. X + 580 pp. Illustrated. $3.20 postpaid.

The joint sale of agricultural products is one of the most important movements of the present day, affecting the interests of the whole nation. The authors of this book are well fitted by training, observation, and experience to analyze the principles of cooperative marketing and to understand the movement in relation to national and international social and business life. The book is designed for a textbook in colleges and in the senior year of high schools. After a study of the fundamentals, the organization of marketing associations is presented in all its elements, including the legal phases; then the various services—assembling, grading, storing, pooling, transporting, price-making, merchandising, and advertising; followed by interesting material on cooperative marketing abroad. The principles and practices presented are not static, but are derived from case study which has shown a fairly general application.

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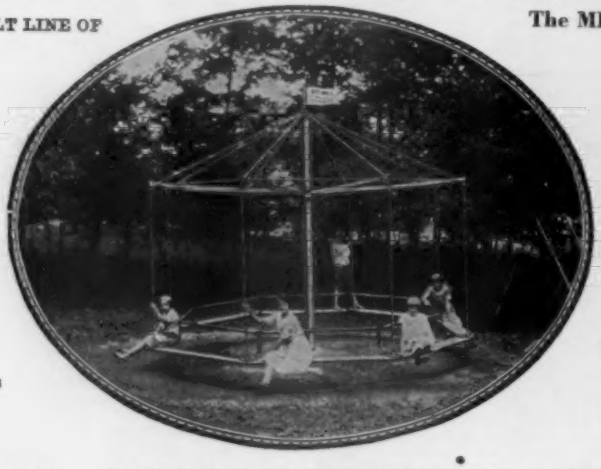

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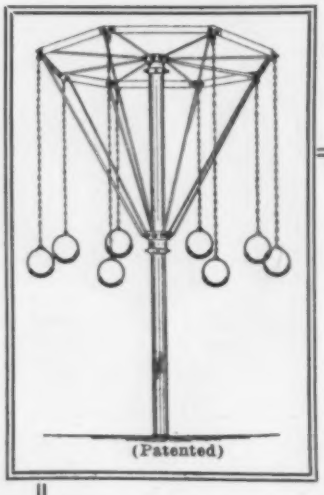

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Regional Plan for the Philadelphia Tri-State District—A Special Report on the Delaware River Bridge Approach.—Prepared by the Bridge Committee of the Regional Planning Federation, Philadelphia Tri-State District, 901 Insurance Co. of North American Building, Philadelphia, Pa. 15 quarto pp. Illustrated. The plan proposed is believed to provide for meeting traffic demands occurring immediately upon the opening of the bridge, and also the ultimate requirements of expanding traffic. It involves the separation of regional from local traffic and of bridge from non-bridge traffic, and the rapid movement of traffic away from the immediate bridge head. (Apply to Howard Strong, Secretary-Director of the Federation.)

A Catechism on the Lakes-to-Gulf Waterway and the Chicago Sanitary District Canal.—By the Sanitary Engineering Committee of the City Club of Chicago, issued with the authorization of the Board of Directors. A series of questions with answers from official publications regarding the controversy over the diversion of Lake Michigan water at Chicago. Also comments by Secretary Hoover on the importance of waterway development, and references to official documents on the Chicago Sanitary District Canal matter. Handy size. 8 pp. (Apply to the City Club of Chicago, Chicago, Ill.)

Formation of Brooklyn Health Council.—Announcement in the June 19, 1926, issue of *Brooklyn*, published weekly by the Brooklyn (N. Y.) Chamber of Commerce. 4 quarto pp. Based on this report of the Subcommittee to the Joint Committee on Health Council of the Brooklyn Chamber of Commerce and Medical Society of the County of Kings, the Brooklyn Health Council is now functioning. The report presents a summary of the agencies for health, welfare, and relief in Brooklyn, with suggestions for better-balanced community service. (Apply to the Chamber.)

A School Medical Inspection Program for Washington.—Proposed by the Monday Evening Club's Public Health Committee, Washington, D. C. This pamphlet reviews the need for medical inspection in the schools, and what Washington has done in this work in comparison with other cities. A three-year program of such service is outlined as a development of the existing service in Washington, at a total added cost of $133,160 a year. A table is given of school inspection facts from 24 American cities. (Apply to Dorsey W. Hyde, President of the Club, Chamber of Commerce of the United States, Washington, D. C.)

The Reorganized State Government of New York.—Including a syllabus of the Hughes Report, the State Departments Law, with index, and provision for further amendments, with an introductory statement by Governor Alfred E. Smith. The data for this report were collected and prepared by James J. Mahoney, Assistant Secretary to the Governor, with the cooperation of the New York State Association. 105 pp., with folding chart showing the reorganization of state government and the functions transferred to the several consolidated departments. (Apply to the Secretary of State, Albany, N. Y.)

Salvaging Macadam and Gravel Pavement by Resurfacing.—Papers and extracts from papers and discussions presented at the Fourth Annual Asphalt Paving Conference held at Detroit, Mich., October 21-23, 1925. Circular No. 33 of The Asphalt Association, 441 Lexington Avenue, New York. This is one of five pamphlets which present the material from the Conference under the subjects, respectively, of Resurfacing, Research, Maintenance, Foundations, and Plant and Equipment. 24 pp. (Apply to the Association.)

Safety Lessons in Chicago.—Six mimeographed sheets issued by the Mayor's Safety Commission (Thomas J. Bowles, Chairman), giving drawings and comment showing dangers attendant upon playing in the streets and the duty of obeying the safety patrol. (Apply to the Commission.)

Highway Improvements and Finance in the New England States, with Special Reference to Vermont.—By Henry R. Trumbower, Economist, U. S. Bureau of Public Roads. An address at the Midwinter Conference of the Vermont State Chamber of Commerce, at Rutland, Vt., January 14, 1926. Published by the Vermont State Chamber of Commerce, Burlington, Vt. Handy size. 24 pp. Tables. Condensed information of value in the development of improved trunk highways, which are highly important parts of our industrial and commercial system. (Apply to the State Chamber.)

Municipal Taxation.—Suggested Study Program prepared by the Massachusetts Taxpayers' Conference Committee of the Massachusetts State Chamber of Commerce, Boston, Mass. June 1, 1926. 14 pp. Certain special topics are suggested and briefly analyzed for further study: Checking the Growth of Municipal Expenditures; Providing a More Equitable Distribution of the Costs of Government; Improving Methods of Procedure; and Clarification and Systematization of Laws Relating to Taxation. (Apply to Edward G. Stacy, Secretary, State Chamber of Commerce, 11 Beacon Street, Boston, Mass.)

The Field of Work of State Chambers of Commerce.—By F. W. Walker, Vice-President, Pennsylvania State Chamber of Commerce; in collaboration with Leonard P. Fox, Ph.D., Manager, Research and Information Bureau, Pennsylvania State Chamber of Commerce. A paper presented at the Third Annual Meeting of the National Association of State Chamber of Commerce Officials, at Washington, D. C., May 10, 1926. Showing what has actually been done by state chambers under the many divisions of their recognized work. Seventeen states reported to the questionnaire for the survey. 47 pp. (Apply to the Pennsylvania State Chamber of Commerce, Harrisburg, Pa.)

The Tuberculosis Survey, Chicago.—This is the first report of a continuous survey conducted by the Chicago Municipal Tuberculosis Sanitarium through the work of two nurses from each of the eight Sanitarium dispensaries, visiting from house to house through areas in each dispensary district that were known to have the greatest health problems, and establishing contacts between the dispensary and those needing service. The July, 1926, *Bulletin* of the Sanitarium. 24 pp. Illustrated. (Apply to the Sanitarium.)

Ventilation in Fire Fighting.—By Daniel H. Shire, Chief of Fire, Police, and Safety, Rock Island Arsenal, Rock Island, Ill. Bulletin 82 of the Engineering Experiment Department of Iowa State College. March 31, 1926. 10 pp. A paper presented at the First Short Course for Fire Fighters, at Ames, Iowa, October 13-16, 1925. "The importance of proper ventilating in fire-extinguishing operations warrants designating it 'the strategy of fire fighting.'" (Apply to the Engineering Extension Department, Iowa State College, Ames, Iowa.)

The Municipal University of Akron, Ohio.—General Catalog, 1926. 231 pp. (Apply to the University.)

Reports Received

CHICAGO, ILL.—Annual Report, Department of Gas and Electricity, 1925

CHICAGO, ILL.—Report and Recommendations, Chief Engineer, Sanitary District, 1926

CLEVELAND, OHIO.—Annual Report, Division of Light and Power, Department of Public Utilities, 1925

KENOSHA, WIS.—Annual Report of the City, 1925

NEWTON, MASS.—Annual Report, City Engineer, 1925

NEW YORK CITY.—Annual Report, Board of Water Supply, 1925

ROCHESTER, N. Y.—Annual Report, Department of Charities, 1925

TACOMA, WASH.—Report and Information Book, Light Department, 1924 and 1925

WESTCHESTER COUNTY, N. Y.—Final Report, Sanitary Sewer Commission, June 7, 1926

Urgent Need for More County Libraries

That more than 51,000,000 people in the United States and Canada—45 per cent of the total population—are without access to local public libraries is indicated by tentative findings of the Committee on Library Extension of the American Library Association recently made public by that organization. Of these persons without public library service, some 47,000,000 live in the open country or in places of less than 2,500 population.

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On the Calendar of Conventions

AUGUST 3-5.—LONDON, ONT.
Union of Canadian Municipalities. Annual meeting. Secretary, S. Baker, City Clerk, London, Ont.

AUGUST 16-20.—YOSEMITE VALLEY, CALIF.
California Conference on City Planning. Annual convention. Secretary-Treasurer, Charles H. Cheney, Palos Verdes, Calif.

AUGUST 16-20.—YOSEMITE VALLEY, CALIF.
League of California Municipalities. Annual convention. Executive Secretary, William J. Locke, 707 Chancery Building, 564 Market Street, San Francisco, Calif.

AUGUST 16-28.—EVANSTON, ILL.
National School for Commercial and Trade Executives. Address: John N. Van der Vries, Chamber of Commerce of the United States, 801 Otis Building, Chicago, Ill.

AUGUST 17-19.—CARROLL, IOWA.
League of Iowa Municipalities. Annual meeting. Secretary, Frank G. Pierce, Marshalltown, Iowa.

AUGUST 25-27.—HALIFAX, N. S.
Union of Nova Scotia Municipalities. Annual convention. Arthur Roberts, Bridgewater, Nova Scotia.

AUGUST 31-SEPTEMBER 2.—HAZLETON, PA.
Association of City Planning Commissions of Cities of the Third Class in Pennsylvania. Fall convention. Address: Department of Internal Affairs, Bureau of Municipalities, Harrisburg, Pa.

AUGUST 31-SEPTEMBER 2.—HAZLETON, PA.
League of Cities of the Third Class in Pennsylvania. Annual convention. Secretary, Fred H. Gates, City Clerk, Wilkes-Barre, Pa.

SEPTEMBER 1-3.—TORONTO, ONT.
Ontario Municipal Association. Annual convention. Secretary, Horace L. Brittain, 21 King Street East, Toronto, Ont.

SEPTEMBER 6-13.—MILAN, ITALY
International Road Congress. Secretary General, M. LeGavrian, Permanent International Association of Road Congresses, 1 Avenue d'Iena, Paris, France.

SEPTEMBER 7-9.—PHILADELPHIA, PA.
National Association of Gardeners. Annual meeting. Secretary, Dorothy Ebel, 286 Fifth Avenue, New York.

SEPTEMBER 7-10—SPRING LAKE, N. J.
Illuminating Engineering Society. Annual convention. General Secretary, L. H. Graves, 31 West 40th Street, New York.

SEPTEMBER 9-10.—DARLINGTON, S. C.
South Carolina Commercial Secretaries Association. Annual meeting. Secretary-Treasurer, George T. Barnes, Greenwood, S. C.

SEPTEMBER 13-14.—VIENNA, AUSTRIA
International Conference on Housing and Town Planning. Address: H. Chapman, Organizing Secretary, International Federation for Town and Country Planning and Garden Cities. 3 Gray's Inn Place, London, W. C. 1, England. (Copies of the itinerary of the tour of the American delegation, planned by the Federated Societies on Planning and Parks, can be obtained from American Civic Association, Union Trust Building, Washington, D. C.)

SEPTEMBER 14-17.—RICHMOND, VA.
Atlantic Deeper Waterways Association. Annual convention. Secretary-Treasurer, Wilfred H. Schoff, 1405 Widener Building, Philadelphia, Pa.

SEPTEMBER 14-17.—PROVIDENCE, R. I.
New England Water Works Association. Annual convention. Frank J. Gifford, 715 Tremont Temple, Boston, Mass.

SEPTEMBER 20-23.—ATLANTIC CITY, N. J.
American Institute of Accountants. Annual convention. Secretary, A. P. Richardson, 135 Cedar Street, New York.

SEPTEMBER 21-23.—COLORADO SPRINGS, COLO.
International City Managers' Association. Annual convention. Executive Secretary, John G. Stutz, Lawrence, Kans.

SEPTEMBER 21-24.—ASHEVILLE, N. C.
International Association of Municipal Electricians. Annual convention. Secretary, Erwin H. Benz, Municipal Building, West New York, N. J.

SEPTEMBER 28-29.—TORONTO, ONT.
Canadian Tax Conference of the Citizens' Research Institute of Canada. Annual conference. Director, Horace L. Brittain, 21 King Street East, Toronto, Canada.

SEPTEMBER 28-OCTOBER 1.—WASHINGTON, D. C.
American Society of Sanitary Engineering. Annual meeting. Secretary, James R. Walker, 105 Cummings Street, Boston 18, Mass.

OCTOBER 4-7.—WASHINGTON, D. C.
National Tuberculosis Association. Annual meeting. Executive Secretary, Frederick D. Hopkins, 370 Seventh Avenue, New York.

OCTOBER 4-8.—CLEVELAND, OHIO
American Electric Railway Association. Annual convention and Manufacturers' Exhibit. Executive Secretary, J. W. Welsh, 292 Madison Avenue, New York.

OCTOBER 4-8.—ATLANTIC CITY, N. J.
Special Libraries Association. Annual meeting. Secretary, Estelle Liebmann, E. I. Du Pont De Nemours & Company, Wilmington, Del.

OCTOBER 4-9.—ATLANTIC CITY, N. J., PHILADELPHIA, PA.
American Library Association. Executive Secretary, Carl H. Milam, 86 East Randolph Street, Chicago, Ill.

OCTOBER 5-6.—FARMVILLE, VA.
League of Virginia Municipalities. Annual convention. Secretary, Morton L. Wallerstein, 408 Travelers Building, Richmond, Va.

OCTOBER 6-8.—PHILADELPHIA, PA.
American Society of Civil Engineers. Fall meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

OCTOBER 7-15.—SAN FRANCISCO, CALIF.
All-Western Road Show. Address: P. H. Curtis, Manager, 625 Market Street, San Francisco, Calif.

OCTOBER 11.—MEMPHIS, TENN.
Association of American Cemetery Superintendents. Annual convention. Secretary, W. B. Jones, Highwood Cemetery, Pittsburgh, Pa.

OCTOBER 11-14.—BUFFALO, N. Y.
American Public Health Association. Annual meeting. Secretary, Homer N. Calver, 370 Seventh Avenue, New York.

OCTOBER 15-21.—PITTSBURGH, PA.
American Prison Association. General Secretary, E. R. Cass, 135 East 15th Street, New York.

OCTOBER 18-20.—NEWTON, KANS.
League of Kansas Municipalities. Annual convention. Secretary-Treasurer, John G. Stutz, University of Kansas, Lawrence, Kans.

OCTOBER 18-21.—NORFOLK, VA.
American Association of Port Authorities. Annual convention. Secretary, Tiley S. McChesney, Room 200, Court Building, New Orleans, La.

OCTOBER 18-22.—ATLANTIC CITY, N. J.
Playground and Recreation Association of America. Annual Recreation Congress. Secretary, H. S. Braucher, 315 Fourth Avenue, New York.

OCTOBER 19-20.—SALEM, MASS.
Massachusetts Federation of Planning Boards. Annual conference. Executive Secretary, Edward T. Hartman, 37 State House, Boston, Mass.

OCTOBER 19-22.—NEW ORLEANS, LA.
International Association of Fire Engineers. Annual convention. Secretary, James J. Mulcahey, City Hall, Yonkers, N. Y.

OCTOBER 22.—DAVENPORT, IOWA
Iowa Association of Commercial Organization Secretaries. Annual meeting. Secretary, G. B. Eastburn, Marshalltown, Iowa.

OCTOBER 24-27.—PITTSBURGH, PA.
National Association of Commercial Oraginzation Secretaries. Annual meeting. Secretary-Treasurer, Walter O. Lochner, Chamber of Commerce, Trenton, N. J.

OCTOBER 25-27.—PHILADELPHIA, PA.
International Association of Dairy and Milk Inspectors. Annual convention. Secretary-Treasurer, Ivan C. Weld, Pennsylvania Avenue at 26th Street, Washington, D. C.

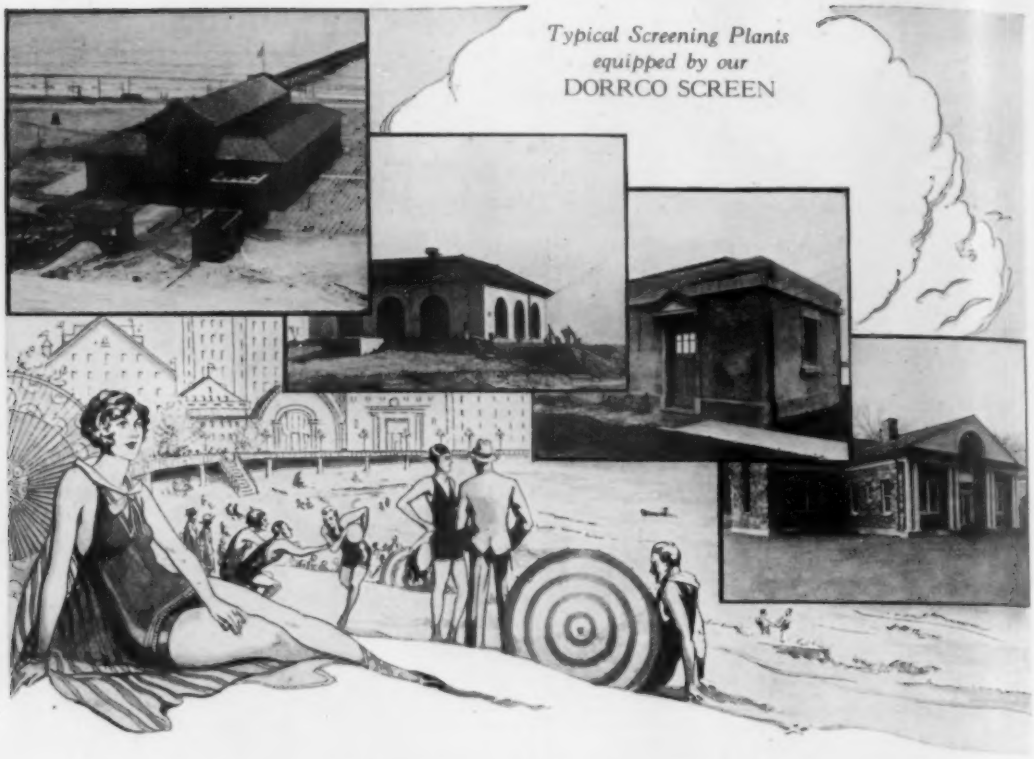
OCTOBER 25-28.—HOUSTON, TEXAS
American Institute of Park Executives. Annual convention. Executive Secretary, Will O. Doolittle, Box 432, Rockford, Ill.

OCTOBER 25-29.—DETROIT, MICH.
National Safety Council. Annual Safety Congress. Managing Director, W. H. Cameron, 168 North Michigan Avenue, Chicago, Ill.

NOVEMBER 8-10.—ST. LOUIS, MO.
National Municipal League. Annual convention. Secretary, H. W. Dodds, 261 Broadway, New York.

NOVEMBER 8-12.—WASHINGTON, D. C.
American Society for Municipal Improvements. Annual convention. Secretary, C. W. S. Sammelman, 3817 Olive Street, St. Louis, Mo.

JANUARY 10-14.—CHICAGO, ILL.
American Road Builders' Association. Annual convention and Road Show. Secretary, Ethel A. Birchland, 37 West 39th Street, New York.



Free Your Bathing Beaches from Pollution!

THERE is nothing more disagreeable or menacing to the health of bathers than the foul and littered condition of beaches caused by polluting sewage.

Such conditions can easily be prevented.

DORRCO SCREEN UNITS have been installed by such famous resorts as Atlantic City, N. J., Miami, Fla., Long Beach, Cal., and many others, to protect their beaches from pollution.

These screens, which can be attractively housed, are self-cleansing, require very little power and only a limited amount of manual attention.

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INVESTIGATION TESTS DESIGN EQUIPMENT

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

A New Sewage Ejector Pump

A sewage ejector pump which completely eliminates the sewage ejector strainer basket has been developed by the Chicago Pump Company, 2319 Wolfram Street, Chicago, Ill. To effect this, a "flow reversal" principle is used. The new development has been named the "Flush-Kleen" dry basin sewage ejector.

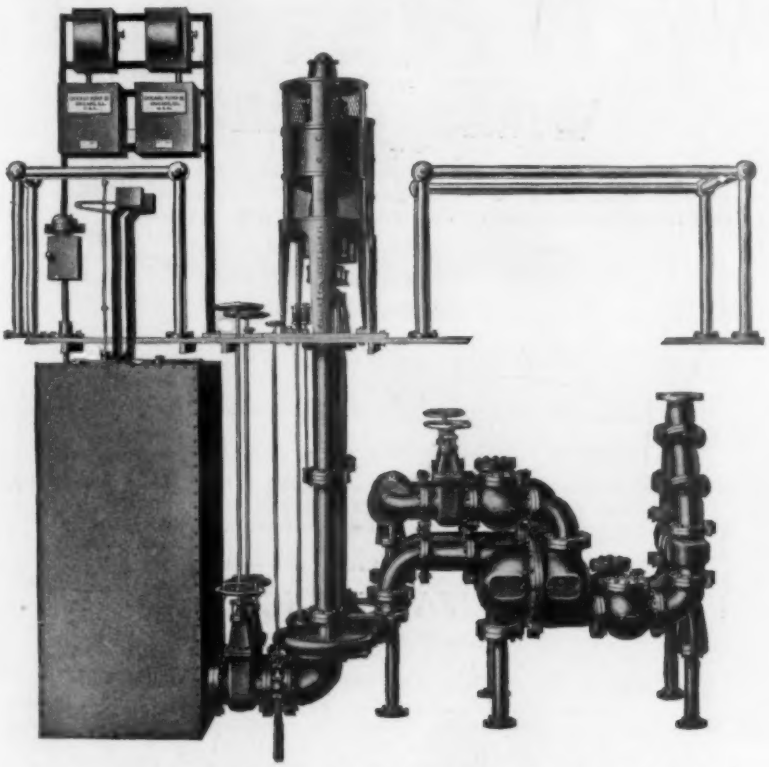
The strainer itself consists of a cast iron screen. This screen is of 1-inch mesh and is enclosed in a special cast iron housing. The strainer chamber is placed in the ejector pit between the inlet and the pump casing. This means that all sewage entering the wet basin must first pass through the strainer, then through the pump and into the basin. When the water rises in the wet basin to a predetermined height, the switch is closed, and the pump starts and reverses the flow of water pumping the water out of the wet basin, through the strainer, and into the sewer. All solids and foreign matter collected by the screen are carried into the sewer by this outward flow of water, thus cleaning the screen.

The velocity of the water flowing out of the pump and through the screen is great. It is four or five times in excess of the velocity of the water when it enters the wet basin. This makes certain that foreign matter caught in the screen will be pushed out of the screen and discharged into the sewer.

A complete Flush-Kleen ejector unit consists of two centrifugal pumps, two vertical motors, two Flush-Kleen self-cleaning screens, one wet basin, one control panel, two floats and float switches, two automatic alternators, and one floatless high-water alarm.

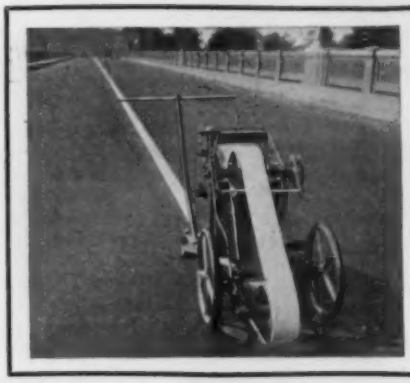
Sullivan Moves Spokane Office

The Sullivan Machinery Company, 125 South Michigan Avenue, Chicago, Ill., has announced the removal of its northwestern sales office at Spokane, Wash., to 120 South Lincoln Street, Spokane. The change provides larger quarters, and the offices, display room, and warehouse will be together at the new location, with Robert T. Banks as Manager as heretofore.



A FLUSH-KLEEN DRY BASIN SEWAGE EJECTOR UNIT

MR. TRAFFIC OFFICIAL! YOU ARE RESPONSIBLE TO YOUR CONSTITUENTS AND THE DRIVING PUBLIC



If your streets and drives are not properly painted, if your danger zones are not marked, in case of accident, you are morally to blame.

THE CONTINENTAL ZONE PAINTING MACHINE is the only machine which makes PERFECT TRAFFIC LINES. It is so simple and operates so easily that anyone can do your MARKING. THE CONTINENTAL ZONE PAINTING MACHINE means "THE PUBLIC PROPERLY INSURED AT A MINIMUM COST."

You cannot afford to wait one day longer. Order your Machine.

THE CONTINENTAL PRODUCTS COMPANY

Manufacturers of

Paint, Varnish, Waterproofing and Roof Coating

1420-1460 E. 222nd ST. **EUCLID, OHIO**

Remember Continental Street Marking Paint (White or Orange) should be on your Traffic Lines if you want them to stand out and last. *Just try it, we'll get more orders.*

Hazard

RUBBER INSULATED

WIRES & CABLES

Wherever possible all wires and cables should go underground for the sake of service and ultimate economy. If you cannot go underground the next best move is to put something good and lasting overhead.

HAZARD SPIRALWEAVE TREE WIRE

HAZARD SPIRALWEAVE FIRE ALARM CABLE

HAZARD Spiralweave Tree Wire and Cables are in use in practically every locality and giving satisfactory service.
Send for copy of I. A. M. E. specifications covering cables.

"Made for users who want the best."

HAZARD MANUFACTURING COMPANY

Wilkes-Barre, Penna.

New York Chicago Pittsburgh Denver Birmingham Philadelphia

THE EL CONQUISTADOR HOTEL WELL, WHICH FLOWED 928 GALLONS PER MINUTE, ASSURING THE SUCCESS OF THE NEW COMMUNITY HOTEL

Water-Supply for Community Hotels in Arid Country

Those who build community hotels in the East, rearing them without thought for the source of water-supply long since established, do not share the anxiety of mind caused by that problem in the cities of the Southwest, according to The Hockenbury System Inc., Harrisburg, Pa. In the desert country a precarious condition exists until such supply has been assured. Perhaps the outstanding feature of the unique new tourist hotel now under construction at Tucson, Ariz., is the artesian well which provides water for all needs of the hotel and its guests.

Immediately following the financing of the community hotel at Tucson, fostered by the Chamber of Commerce and erected by The Hockenbury System, Inc., Frank Craycroft, Chairman of the Hotel Building Committee and a mining engineer, made a study of the surrounding mountain ranges as to watershed areas and the degree pitches of the strata to determine where a water channel might be found. His judgment was substantiated by drilling.

Recent Essco Awards

The E. D. Bullard Company of San Francisco and Los Angeles, Calif., representing the Essco Manufacturing Company, of Peoria, Ill., recently sold 52 Essco stop and go signals to Oakland, Calif. The Essco Manufacturing Company has also been awarded a contract by Memphis, Tenn., for a minimum of 57 signals.

A New Flexible Pipe Joint for Water-Mains

A new pipe joint known as the Victaulic joint, which is used extensively in England, has been introduced in this country by the Victaulic Company of America, 26 Broadway, New York City. This joint, which consists of two metal half housings, two bolts and nuts, and a rubber ring, provides a certain amount of flexibility which will undoubtedly do away with many of the blown joints now caused by slight settling of cast iron mains. The half housings serve to locate the rubber ring, which is of special composition, over the ends of the pipe and also to join the pipes together, allowing such clearances as are necessary to obtain a small degree of flexibility and expansion and to protect the rubber ring from damage on all sides.

Standard cast iron pipe without the bell is upset by the manufacturers to form the seat for the metal housing. In installing this joint, the leak-proof ring of special rubber composition is flexed over the pipe end and the half housings are bolted together over it. The whole operation is performed in not more than two or three minutes on any pipe up to 12 inches in diameter.

Those who have examined this type of joint have been particularly impressed with its desirability on lines leading from wells, as it will be possible to maintain better vacuums on lines equipped with Victaulic joints than with screwed joints.

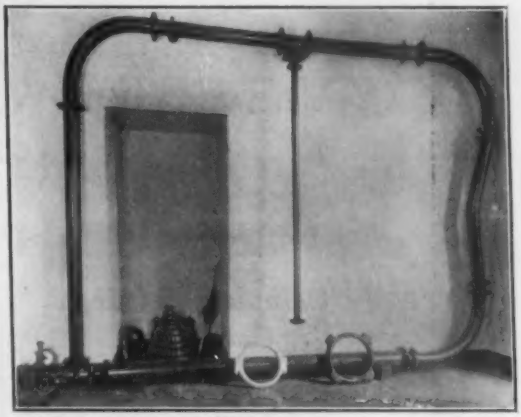


EXHIBIT OF VICTAULIC JOINTS, SIMILAR TO DISPLAY AT AMERICAN WATER WORKS CONVENTION

The demonstration of Victaulic joints at the American Water Works Association Convention in Buffalo attracted considerable attention. An archway of pipe was set up with these joints and suspended from it was a pipe about 6 feet long, the whole system being kept continually under about 180 pounds pressure. The suspended pipe was readily swayed back and forth and even made to slip around the arched pipe without causing any leakage which could be discerned at the joint or noted on the pressure gage.

Motor Grader with New Features

A motor patrol grader for one-man operation, using the 10-20 McCormick Deering tractor and equipped with cab, has been developed by the Russell Grader Manufacturing Company, Minneapolis, Minn. This Russell motor patrol No. 3 has dual rubber-tired rear wheels, an independently adjustable scarifier completely controlled from the

THE NEW RUSSELL HEAVY-DUTY ONE-MAN GRADER

Lamp Posts

—

Service Boxes

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Valve Boxes

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Write for Prices
&
Complete lighting Catalogue

The Casey-Hedges Co.
Chattanooga, Tenn.

Who Makes It?

See Pages 4 and 6

And Save Time

CHAUSSE
Oil Burning Tool and Surface Heaters
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CHAUSSE OIL BURNER CO.
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BRAXMAR BADGES

Police, Fire and Municipal Badges in all Metals— Fully Illustrated Catalog.

C. G. BRAXMAR CO., Inc.
242 West 55th St. New York

for **IMPROVED BRASS STREET SIGNS**
also **Warning Signals** *and* **Traffic Markers** *for* **Every Use**
Write for the Catalog of the
UNION IRON PRODUCTS COMPANY
East Chicago Indiana

operator's platform, and a 52-inch circle which gives a wide, rigid support to the blade with a snug-fitting, sure, durable lock.

Some of the refinements found in this unit are machine-cut gears which are completely enclosed, bronze bushings and bronze collars for the worm shaft, a take-up bearing in the forward lifting arm bracket, extra large ball-and-socket connections in the lifting links, machined worm-gear steering control, giving an easy, steady control especially adapted to road work, Alemite lubrication throughout, Timken bearings on the front wheels, a positive lateral shift of the blade adjustable from the operator's platform, and a side cranking device.

A pressure of 4,200 pounds is brought on the blade because the machine is built with a proper distribution of weight and with the proper balance so that no additional loading is necessary to get this increased pressure. The blade is reversible and may be tilted forward or backward from a leveling to a cutting position. Both the blade and the cutting edge are made with a special high-carbon steel highly polished, and will scour satisfactorily.

The power-plant is the well-known 10-20 McCormick-Deering tractor, with forward speeds of 2, 4 and 10 miles per hour and reverse speeds of 3 and 8 miles per hour. The low speed may be used for heavy grading or scarifying work when an unusual amount of power is required. The intermediate 4-mile speed is best for maintenance work. On high, the motor patrol may be transported at the rate of 10 to 15 miles per hour. The reverse speed is frequently used by experienced operators. In filling washouts, holes or ruts or repairing short stretches of bad road, the motor patrol may be worked forward and backward until the job is completed, with no need of turning the machine around.

A New Squeegee Machine for Asphalt Paving

A new squeegee machine for applying bituminous fillers has been developed by Littleford Brothers, 500 East Pearl Street, Cincinnati, Ohio. This device, shown in the accompanying illustration, can be used equally well on all kinds of brick or block paving, wood block floors, etc., or for applying an asphaltic seal coat. It is said to be very economical to operate and makes a neater joint than the old method of hand squeegeeing, in which much of the material was wasted by uneven spraying.

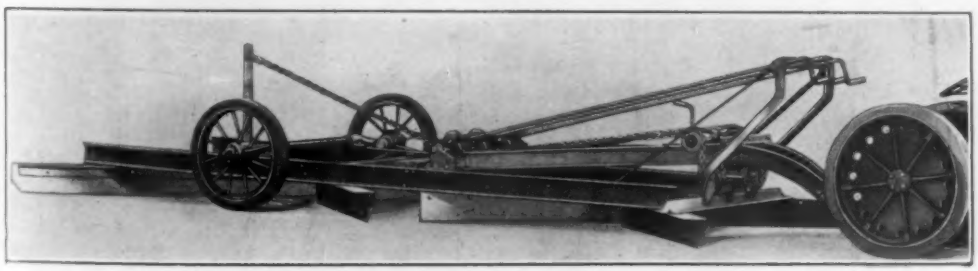
The Littleford squeegee machine consists of a hopper having a capacity of 12 gallons, mounted on two small wheels to which is attached a convenient handle. A quick-acting valve with a handy control rod discharges the hot material directly in front of the curved wiper blade in quantities as needed. This blade has a spread of 25 inches. It is made of heavy rubber and is reversible and adjustable for wear. The machine is small and light enough to be handled by one man, and when operated it is held so that the entire weight of the outfit is supported on the wiper blade. The small wheels are required only when turning the machine around or when it is moved on and off the job.

THE NEW LITTLEFORD SQUEEGEE

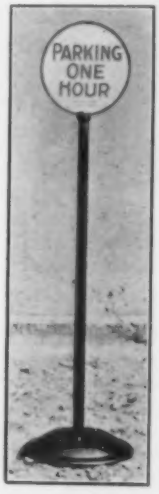
One-Man Road Maintainer for County Roads

The new Adams one-man road maintainer No. 6, manufactured by J. D. Adams & Company, Indianapolis, Ind., is so designed that it can be hitched to any light tractor by a simple drawbar and clevis, thus leaving the tractor readily available for other work, and the maintainer need not be held up for any possible tractor repairs. The maintainer has 40 feet of blade, which works the road surface four times, thus doing four times the work of a motor grader or a single blade machine. The blades are rigidly fastened to the main structure and cut in the same plane. The machine itself rises and lowers with the blades. Maintainer controls are conveniently placed so that one man in his normal position on the tractor can easily control both machines.

The Adams one-man maintainer cuts 9 feet wide. The illustration shows the manner in which the loose material cut by the blades is worked back and forth across this 9 feet four times in one passage. In starting work the operator sets the blade to cut the proper depth and with the proper pressure according to the condition of the road. As he proceeds, it is easy for him to glance behind to observe whether the machine is cutting deep enough or too deep, and any adjustments are easily made without stopping.



SIDE VIEW OF THE NEW ADAMS ROAD MAINTAINER



UNBREAKABLE PARKING SIGNS

All steel; each and every sign rust-proofed by special process which prevents rusting of the sign plate. These elastic enamelled signs will not break, crack or chip; made of heavy steel with lettering as may be desired. There is no better sign in this class than the UNBREAKABLE CENTURY STEEL SIGN.

THE EVERNU-CENTURY SIGN COMPANY

100 Colonial Road **Boston (Brighton), Mass.**

Also manufacturers of the EVERNU STREET SIGNS, the WIRELESS ELECTRIC BEACON and BOULEVARD STOP SIGNS.

DAY AND NIGHT

Our factory is running day and night filling the largest single order ever placed with any concern for parking signs and holders.

HOWEVER

This doesn't mean that we can't give your order or inquiry prompt and intelligent attention.

Send for our handsome catalog on Street Signals, Standards and Parking Signs. It is free!

ROCHESTER STREET SIGNAL CO.

400 WARD BLDG.

ROCHESTER, N. Y.

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"IDEAL" STREET & TRAFFIC SIGNS

Will not chip or crack

are used in St. Louis and many other cities. Many thousand names in stock for immediate use. Attractive and durable. Write for prices and sample.

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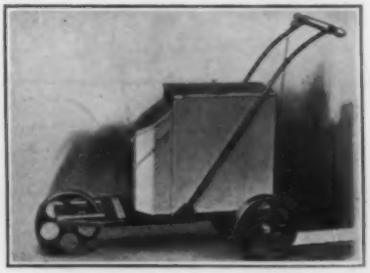
1421 Locust St. **St. Louis, Mo.**

LINE-O-GRAPH



Highway Marking Machine

For Painting

SAFETY

Dangerous Curves
Safety Zones
Parking Spaces
Street Crossings

Operated by one man, does away with Brushes, eliminates all hand-painting, marks with any kind of Highway Paint, makes perfect lines on any pavement.

THE LINE-O-GRAPH CO.

Factory: **Yonkers, N. Y.** **17 E. 42nd St., New York City**

All blades but the rear one are in fixed position at a 45-degree angle. The rear blade is fastened to each main frame member by clamp brackets. By loosening the clamp bolts, this blade can be set in any desired position, and by sliding the blade back and forth in the clamps, it can be completely reversed to deliver from right to left or left to right as desired.

Ellipsoidal-Bottom Water-Tanks

The ellipsoidal-bottom water-tank made by the Chicago Bridge and Iron Works, Old Colony Building, Chicago, Ill., is well adapted for municipal and factory as well as railroad service, because of several features. The tank is made of large diameter and shallow depth, so as to give the smallest practical variation of head maintaining a nearly constant pressure in the main so that the pump does not work against a needlessly high head.

The tank is built entirely of steel with no wood to rot. The large riveted steel riser pipe is made of sufficient diameter to prevent interruption of service from freezing under ordinary working conditions. This construction eliminates the need of frost boxing and results in an all-steel structure. The large riser pipe is riveted directly to the tank bottom, which is flat at the point of connection and takes care of any expansion in the riser pipe The manufacturers claim that this is the only type of tank which requires no expansion joint.

A 150,000-GALLON ELLIPSOIDAL-BOTTOM TANK 55 FEET TOP TO BOTTOM, FRESNO CITY WATER CORP., FRESNO, CALIF.

The riser pipe acts as a settling basin for any sand or sediment that may be carried in the water. It may be equipped at the bottom with a blow-off valve so that the tank can be cleaned out at any time without emptying it and interrupting its service. To make sure of drawing off clean service water, the outlet pipe is extended several feet above the extreme bottom of the large riser. The only maintenance cost for the tank is painting it every three or four years.

Claussen Joins McWane

The McWane Cast Iron Pipe Company, Birmingham, Ala., has announced that A. W. Claussen, formerly Assistant Engineer, National Underwriters Laboratories, Chicago, Ill., has joined its organization as Research Engineer, with headquarters at Birmingham.

Randlett Becomes Pacific Coast Manager

F. M. Randlett has been promoted to the position of Pacific Coast Manager of the Robert W. Hunt Company, with jurisdiction over the San Francisco and Los Angeles, Calif., Seattle, Wash., and Portland, Ore., offices. Mr. Randlett was formerly District Manager of the Pacific Northwest, with headquarters at Portland, Ore, and Seattle, Wash., and previously in the Engineering Department of the New York, New Haven and Hartford Railway and with Stone and Webster, Inc. The home offices of the Robert W. Hunt Company are at 2200 Insurance Exchange, Chicago, Ill.

Robert W. Hunt & Co., Ltd., Montreal, Canada, have announced that they have a completely equipped cement testing laboratory in connection with their office in the Harbor Administration Building, Toronto, Canada. J. F. Keane is the Toronto Manager.

One-Man Graders to Maintain Michigan Roads

To be ready for the extensive maintenance program in Michigan, the Michigan State Highway Department purchased two dozen Hadfield-Penfield one-man graders manufactured by the Hadfield-Penfield Steel Company, Bucyrus, Ohio. The accompanying illustration shows this fleet of graders ready to be distributed to the various districts in Michigan to do their bit in the campaign against bad roads. This equipment was sold through William Ford & Company, distributors, Detroit, Mich.

LINE-UP OF HADFIELD-PENFIELD GRADERS FOR USE ON MICHIGAN HIGHWAYS

TYPE OF INSTALLATION AT
ASBURY PARK, N. J.

CATALOGUE ON REQUEST

HORNI SIGNAL MFG. CO.

183 Varick St. **New York City**

Sanitary
Safe
Saves Towels
Saves Money
Increases Patronage
Sizes to meet any Requirement

Write for Prices

The R. B. Dryer was designed and first developed by Mr. Robert Bishinger, nationally known for his developments of apparatus for use in Hair-Dressing Establishments, where the operation of this machine proved so satisfactory that the present design has been developed for the larger general field of Hotel, Institutions, Swimming Pools, etc.

Fort; sold for Pools of the Public Schools of Pittsburgh

H. W. KEEBLER MFG. COMPANY
422 FIRST AVENUE PITTSBURGH, PA.

ALUMOYD TRAFFIC SIGNS
ROADPILOT—THE IMPROVED REFLECTING SIGNAL

Street Signs
Zone Markers
Direction Signs
Highway Markers
Etc.

All Castings of Special Alloyed Aluminum

Write for Catalog and Prices.

THE AUTOMATIC SIGNAL AND SIGN CO.
Michigan at 11th St., Chicago, Ill.